MAY 1917 — № 137

Monthly

A Reference for Buyers

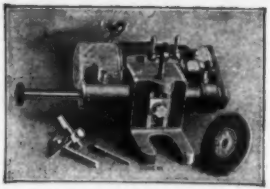
HITCHCOCK'S MACHINE TOOL LIST

Distributed Free to Machine Tool Users Everywhere in the United States and to Dealers in American Machinery Abroad

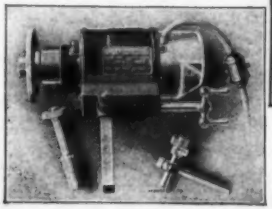
Published by
A·H·HITCHCOCK
1220-1235 Caxton Building
Chicago

HISEY
Electric Drills and Grinders

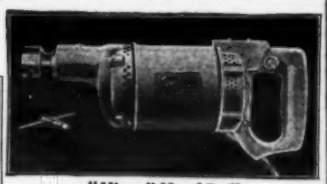
Most complete line of Portable Electric Tools



Combination Internal and External Grinder
Two Sizes: ¼ and ½ Horse Power



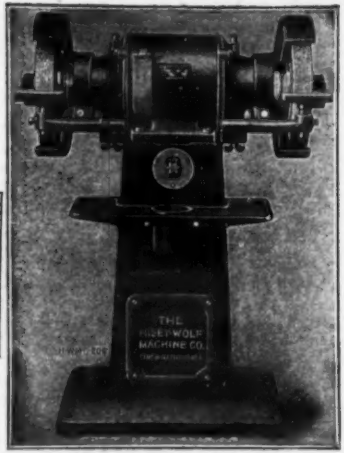
Tool Post Grinder
Ten Styles and Sizes



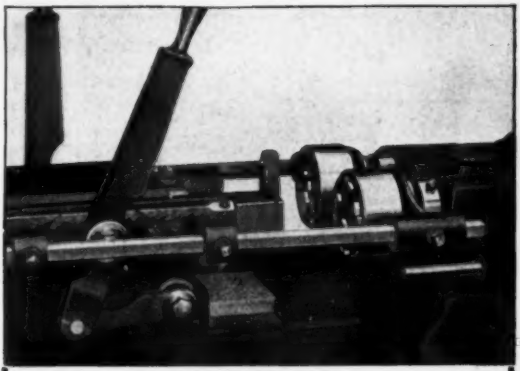
"Hisey" Hand Drill
Eight Styles and Speeds

Write for catalog HH

The Hisey-Wolf Machine Co.
Cincinnati, Ohio
New York Office, 50 Church St.



Ball Bearing Floor Grinder
Also made with Base for Bench Mounting
Five Sizes: ½ to 5 Horse Power



Specializing for Economy

Above is a "close up" view of the NAMCO Bolt Threader for cutting threads on bolts, screw blanks, spring clips, etc.

The design and manipulation of this machine is both simple and practical.

The NAMCO Bolt Threader

- —is semi automatic
- —has two spindles
- —reverse movement of slide for extracting and reloading closes die, ready for next cut
- —runs left or right handed without reversing tools
- —carries NAMCO Self Opening Dies

There's real economy in this method of specialization.

Catalog?

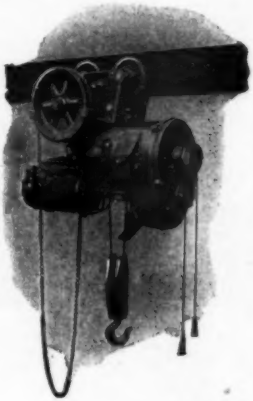
THE NATIONAL ACME COMPANY

NEW ENGLAND PLANT WINDSOR, VT. **Cleveland, O.** CANADIAN SCREW PLANT MONTREAL, P. Q.

Branch Offices:

NEW YORK BOSTON CHICAGO DETROIT ATLANTA SAN FRANCISCO
WAREHOUSES—NEW YORK, CHICAGO With FOREIGN REPRESENTATIVES

Makers of Gridley Single and Multiple Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies and Screw Machine Products at Cleveland, Ohio



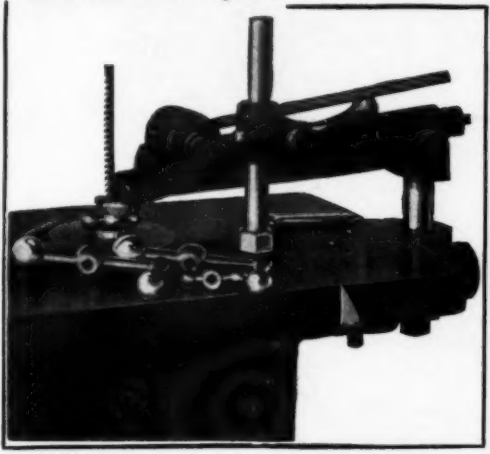
A type "U" Hoist in your plant ***will replace from 10 to 15 laborers***—and ***it will pay for itself in less than 90 days.***

Built in sizes from ½ Ton to 6 Ton capacity.

We'll be glad to mail you Bulletin 301-BH and prices.

PAWLING & HARNISCHFEGER CO.
MILWAUKEE WISCONSIN

How many small jobs
Like this have you?



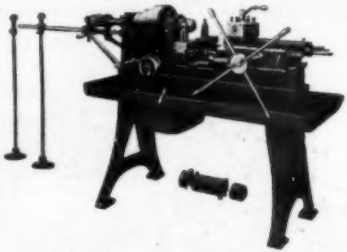
Davis
Keyseaters

have saved hundreds of firms time and money for more than two score years. We can do the same for you.

Write for Catalog

DAVIS MACHINE TOOL CO., Inc.
ROCHESTER, N. Y., U. S. A.

Turret Lathes and Screw Machines



built and designed to give maximum permanent accuracy and efficiency. Reasonably priced.

Himoff Machine Co., Inc.

134 Mott Street, New York, U. S. A.

You Need This Book!

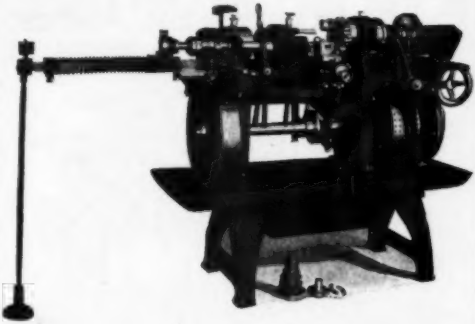
If you are a User of Electric Motors or a Manufacturer marketing Motor Driven Machines, this little Monthly Booklet will interest you.

It contains description and prices on a large Stock of Motors—sizes ½ to 100 H. P., which we can ship *immediately* from stock — Motors which cannot be procured from the factory in less than six months.

Our Motor List No. 22 is just out! Ask for a Copy and we will mail Booklet to you monthly.

We want to buy Motors as well as to sell
What have you available?

THE W.G. NAGEL ELECTRIC CO.
TOLEDO. OHIO



Chicago Automatics

No. 1	¾	in. Capacity
No. 2	1¼	in. Capacity
No. 4	2	in. Capacity

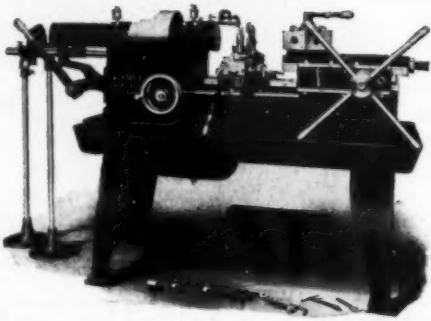
For Sale By The

John Macnab Machinery Company

90 West St., New York City

Of Wide Range and Great Capacity

The 1" Pierce Makes New Records



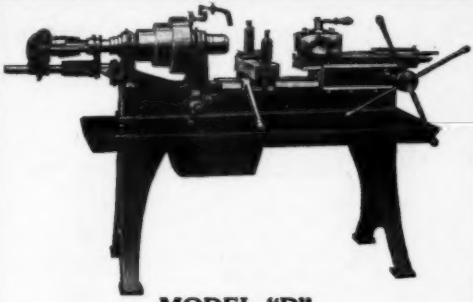
This Turret Screw Machine does larger work than any other of the same size, does that or any other work as fast or faster, and does it with a degree of accuracy that no machine of this type has ever surpassed. It is convenient, rigid, simple and durable—a machine built for maximum profitable service. It is no longer necessary to buy large, costly machines to get the diameter and turret travel.

The Countershaft Pulls 15 H. P., while others slip under pull of 5 to 10 h. p. The bearings are of the best white metal obtainable. Our circular gives complete details, and it will pay you to know all the interesting facts.

Send us your address today

Pierce Machine Tool Company

617 W. Jackson Blvd., Chicago, Ill.



MODEL "D"

Turret Lathes and Screw Machines

Now Ready for Delivery

Designed for Rapid Manufacturing of Parts Requiring Several Operations

MADE IN FOUR SIZES:

No. 2 { $1\frac{7}{16}$" Wire Feed Capacity, Plain Head
{ $1\frac{9}{32}$" Hole Through Spindle.

No. 3 { $1\frac{5}{16}$" Wire Feed Capacity, Plain Head
{ $1\frac{13}{32}$" Hole Through Spindle.

No. 4 { $1\frac{5}{8}$" Wire Feed Capacity, Geared Head
{ $2\frac{1}{32}$" Hole Through Spindle.

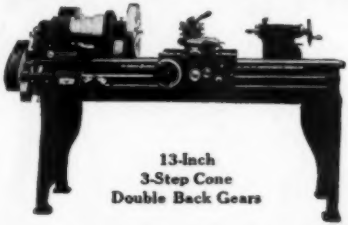
No. 5 { $1\frac{7}{8}$" Wire Feed Capacity, Geared Head
{ $2\frac{9}{32}$" Hole Through Spindle.

With or Without Power Feed to Turret Slide.
Mechanically Perfect and Fully Guaranteed.

Manufactured By

Smurr & Kamen Company
313 N. Whipple St., Chicago, Ill.

"Filsmith" High Power Lathe



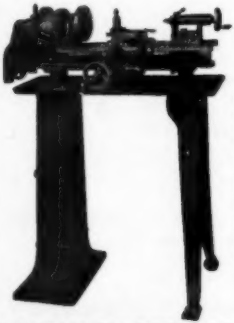
13-Inch
3-Step Cone
Double Back Gears

A high-grade lathe with great power for its rated swing, with exceptional strength for its weight, and with many new and practical features. It combines power, accuracy and convenience in unusual degree. You will find the description interesting and the price right for quality.

PHILIP SMITH MFG. CO., SIDNEY, O.

Increase Production

with a



"DALTON SIX"

The "DALTON SIX" will not only increase production of small parts, but reduce the unit cost. Can be furnished with 30" or 36" bed, either two or three step cone pulley.

Furnished for either English or metric thread cutting.

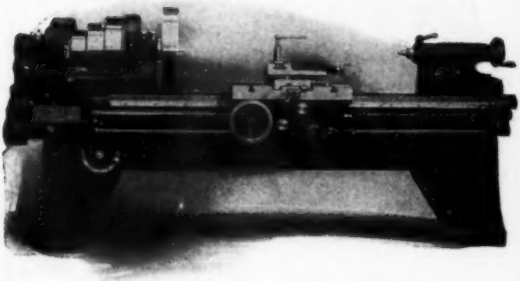
No manufacturer producing small parts can afford to be without a "DALTON SIX."

Bulletin B-602 gives full specifications.

DALTON MACHINE CO., Inc., **1911-15 Park Av. NEW YORK, U. S. A.**

WALCOTT LATHES

Made in 14, 16, 18, 20, 26 and 28" sizes



For Tool-Room and Factory

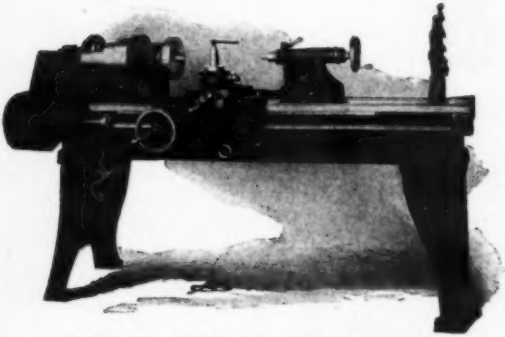
Walcott Lathe Co.

Jackson, Michigan

The High-Grade Screw-Cutting

Canedy-Otto Engine Lathe

With Three Quick Feed Changes



14", 16" or 18" Swing, with 6' or 8' Bed.

This extremely convenient and practical lathe is designed to combine strength with simplicity. The spindle is made of 50 point carbon steel, accurately ground, and runs in the best quality of bronze bearings. Carriages are gibbed front and back. All gears are of wide face and accurately cut. In fact, it is built throughout for hard, practical work—a reliable shop tool of real merit.

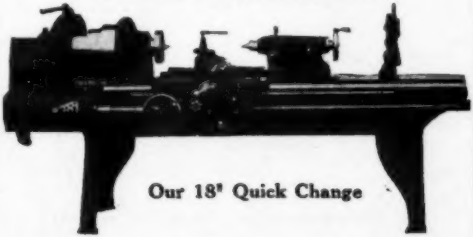
We cordially invite your most careful investigation

Canedy-Otto Manufacturing Co.

Chicago Heights, Ill.

The "Chard"

A Lathe of Super-Quality



Our 18" Quick Change

The term "just a lathe" will never apply to the "Chard." When it will handle very heavy work with perfect ease, speed and accuracy, including the boring of holes thru bronze without tolerance of any kind, it hardly can be termed "just a lathe."

From the stiff legs, which are properly placed where the greatest strain comes, to the countershaft fitted with Hyatt roller bearings, it is superior in design, construction and material.

An example of its super-quality throughout may be found in the bed, which is of extra weight, with heavy cross braces 24" apart. The top of the bed is chilled to ⅝" below the V's, making it 20% harder than the compound rest or any surface sliding on it.

In convenience, in interchangeability of parts and attachments, in everything which gives practical shop values, we not only claim to have a superior lathe, but are willing to prove up.

We solicit your inquiry without obligating you
But we shall feel obligated to back up our claims

Chard Lathe Company

New Castle, Ind.

DOMESTIC DISTRIBUTORS

THE F. O. STALLMAN SUPPLY CO., San Francisco, Cal.
VONNEGUT MACHINERY CO., Indianapolis, Ind.
ENGLISH & MILLER MACHINERY CO., Detroit, Mich.
OGDEN R. ADAMS, Rochester, N. Y.
HILL, CLARKE & CO., Chicago, Ill.
THE W. M. PATTISON SUPPLY CO., Cleveland, Ohio.
BAIRD MACHINERY CO., Pittsburgh, Pa.

Manufacturers:—

Let me figure with you on your requirements. Send blue prints for estimates on:

Tool Making,
Stampings,
Special Machinery,
Machine Parts,
Screw Machine Work.

First-class shop, expert workmen

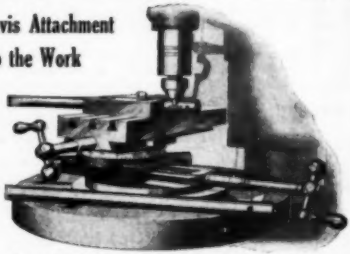
R. G. Clyne, M. E.

Columbia Bldg., St. Louis, Mo.

Don't Buy an Expensive Miller

When a Davis Attachment Will Do the Work

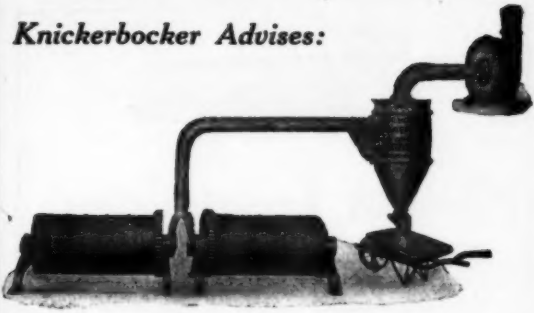
Big Convenience
Big Economy
Small Price



The Attachment does 90% of the lighter jobs as well as a $1,000 machine. Taper cuts half moon keyseats, mills deep grooves and cams. Cutters obtainable from all twist drill and cutter makers. The attractive prices on our air compressor and cylinder reamers for reboring the Ford car, will also surprise you. Write us today.

Hinckley Machine Works, HINCKLEY, ILL.

Knickerbocker Advises:



Use Less Power - Reduce Repairs

And Increase Efficiency

Power—The Morse "Rarefied" Dust Collector invariably saves power wherever installed. One user is now doing with 25 electric h. p. what formerly took 45 h. p.—a net saving of 20 h. p.

Repairs—Reduced to a minimum. With the Morse the dust is collected and automatically discharged before the air reaches the fan, thus preventing abrasion of fan parts, and insuring long life.

Efficiency—The fact that many of the largest plants in the country are using from 5 to 12 Morse Collectors—and are still buying—is strong evidence that they are making good.

Let us send you a list of these prominent users and a copy of our Booklet

The Knickerbocker Company

Jackson, Mich.

Woodruff Keyseat Cutters

We recut Woodruff Keyseat Cutters and alter each dimension necessary to make the next smaller standard size, without annealing, so the shanks will remain standard.

The Cost is 30% of the Original List Price

And We Pay Express One Way

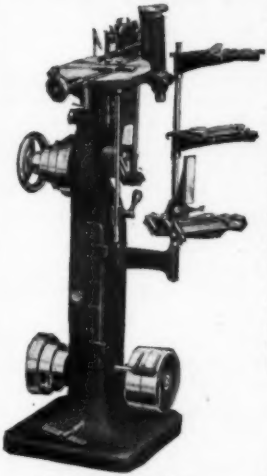
In appearance, workmanship and cutting quality, all cutters recut by us are guaranteed to equal new ones.

Peninsular Tool Salvage Co.

Detroit, Michigan

Cochrane-Bly Machines Insure

Accurate, Low-Cost Filing



No. 2 Filing Machine

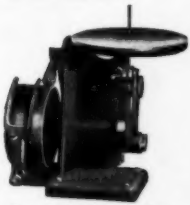
Accurate filing by hand is difficult for the expert; with the Cochrane-Bly No. 2 Filing Machine it is rapidly and perfectly accomplished at minimum cost.

Table is adjustable, also length of stroke, and there are four speeds.

The standard equipment includes arms for Hack Sawing and extension holders for Jig Saws.

This machine meets the most exacting tool room requirements where close finish is desired.

The Bench Filing Machine, shown on the right, is compact and convenient for light filing. Furnished with or without Upper File Support.



Bench Filing Machine

Glad to mail you complete description

Cochrane-Bly Company

Rochester, N. Y., U. S. A.

Also Cold Saws and Automatic Cold Saw Sharpeners
Universal Shapers for Die and Tool Work

Have You Insured Your High Speed Tools?

"Yes," you answer, "I always carry fire insurance." And a fine thing to do, too; but did you know that over the length and breadth of this great country there are not so many High Speed Steel Tools lost in a year by general conflagrations as are ruined every month in the high heats of hardening fires? The insurance you need against *this* kind of fire is

"HETZY"

Heat Easy

the hardening compound that insures expensive tools against loss by the terrific heat of open fire hardening. We have nearly 300 satisfied policyholders.

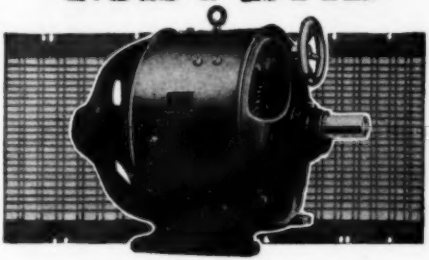
"There's A Reason"

You'll find it in our Booklet No. 23.
Send for it.

Bennett Metal Treating Co.

Elmwood, Conn.

RELIANCE MOTORS



Get More Work From The Same Machines

Each machine in your shop is capable of producing certain maximum results. Reliance Adjustable Speed Motors make it possible to get these results from each machine all the time. They run at any speed over wide ranges so that you can always get just the right speed to suit any operation on any size and kind of material.

Get details in Bulletin 1010
(We build constant speed motors.)

Reliance Electric & Engineering Co.
1050 Ivanhoe Road **Cleveland, Ohio**

Fairbanks Hammers

25 to 300 lbs.

Belt or Motor Drive

These Hammers Embody a Design and Workmanship that are Unsurpassed.

Send for Catalog

United Hammer Co.
Oliver Building, Boston, Mass.

It Is Up To You!

To find out today what a Barr Pneumatic Hammer will do as a time saver in your own plant

If you are doing even a small amount of light tool dressing, forging, welding, straightening, blacksmithing, etc., by hand —you are losing time and money which this tool will save.

It is used by the leaders!

No repairs have been required in two years on the market!

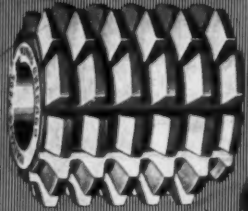
The investment is small!

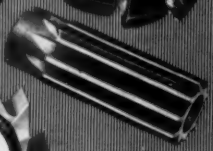
It is the only portable hammer built!

Write now for Circular 10 H

H. Edsil Barr, Mfr.
Erie, Penna.

ILLINOIS TOOLS





IT will be to your advantage to confer with our engineering department, no matter what are your Hob and Cutter requirements.

Standard tools in stock. Prompt delivery on specials.

Write or Wire for Quotations

ILLINOIS TOOL WORKS
CHICAGO, U.S.A.

Cuts 6-in. Steel In 10 Minutes

Smaller sizes of cold rolled steel cut in proportion by the Marvel No. 4

—a high grade, improved tool with the speed, accuracy and convenience that insures bed-rock economy.

Cuts on the draw stroke and lifts free of the cut on the return. A graduated feed wheel gives any desired pressure on the saw blade.

Also other hack saws, punches and shears. Write for circulars.

Patent Applied For

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave. CHICAGO, ILL.

Save Material, Labor and Time

With Peter Bros. Abrasive Cutter

IN THESE DAYS of sky-high prices every economy must be practised, and this is especially true in regard to the cutting of high speed or other hardened steel. This machine goes thru everything, including taps, drills, reamers, brass or copper tubing, etc., with a thin, clean cut. It saves grinding, and does not draw the temper. Soon pays for itself.

8" Size $17.50, with C. S.
Splendid for tool room. Cuts high-speed steel up to ⅝" square.

12" Size $50, with C. S.
Cuts up to 2½" diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.

"Racines" in Your Cutting-off Department will pay well

The very ease of operation of a Racine will make a big saving in repairs.

One blade on this machine will do the work of six on any other machine. Its easy motion makes this possible. By its special strength and construction it literally "eats" steel. The blade sinks into a bar with surprising speed. It will pay you to have a Racine.

Let us tell you why so many firms have installed Racines is their cutting-off departments.

Racine Tool & Machine Co.

1500 Junction Ave. S., Racine, Wis., U. S. A.

Quickwork Rotary Shears

Never Fail to Decrease the Labor Costs from 25% to 50%;

Never Fail to Increase the Output;

Never Fail to Do Better Work.

Cuts straight lines as well as any other Rotary Shear, and in addition will cut the most irregular, serpentine and zigzagged lines across the sheet with one passage of the metal; or it will cut any shape or opening in a sheet without cutting in from the side.

Has three speeds; both cutters driven and the metal is self-feeding, and comes through with smooth straight edges. Send for new catalog.

Twelve Sizes Cutting any thing from the thinest sheets to $\frac{3}{4}''$ Steel Plates.

THE QUICKWORK COMPANY
***Successor to* H. Collier Smith, Detroit.**

Main Factory and Office
St. Marys, Ohio.

Detroit Office and Salesroom, 807-815 Scotten Avenue, Detroit, Mich.

Sheet Metal Cut Mechanically

Immensely Cheaper than by Hand

The New Gray Sheet Metal Cutter

(*Not a Rotary Shear*)

Combines high speed and low cost with splendid results.

Cuts up to 3/16" steel plate at the rate of 20 to 30 inches a minute, at a big saving of time and cost.

Cuts any shape, including all intricate inside angles, curves and corners, and leaves metal perfectly flat, with uncrimped edges.

We shall be pleased to explain fully and guarantee all claims

W. J. SAVAGE CO., Knoxville, Tenn.

The Reason for So Many Repeated Orders

after comparative tests is that no magnifying-glass is necessary to distinguish the increased production and the better class of work on the PEERLESS High Speed Cutting-off Saw.

A third order just came in from one of the largest concerns in the United States, and is it not a fact after a firm has standardized on a certain make of tool that some real results must be produced in order to effect a change?

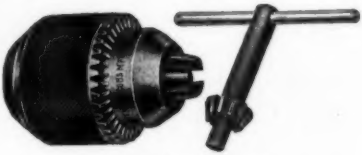
One of our customers writes—"It takes us only 1-15 of the time to cut our stock on the PEERLESS that it did on our other machine."

If you are open to conviction we have a proposition to offer that no manufacturer can afford to pass up.

Peerless Machine Company

1609 Racine Street, RACINE, WISCONSIN

The Jacobs
Improved Drill Chuck



Patented Sept. 16, 1902

Manufactured by

The Jacobs Manufacturing Co.
Hartford, Conn., U. S. A.

Jacobs Drill Chucks

In Stock For Immediate Shipment

40—No. 1	25—No. 3-A
20—No. 1-A	20—No. 4
125—No. 2	15—No. 5
45—No. 2-A	10—No. 6
100—No. 3	15—No. 6-A

and we have additional quantities on order for deliveries in the near future

We carry this large stock for the convenience of our customers who may be in immediate need of drill chucks. Regular manufacturers' prices and discounts.

Purinton & Smith
Machinery and Tools Hartford, Conn.

SKINNER
Drill Press Equipment

The Chuck

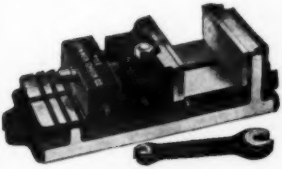
A 3 Jaw "Geared Pattern" Hand Operated Chuck

Designed for accuracy.
Gears "beneath the surface."
Made entirely of steel.
Furnished in four sizes.

The Arbor

Made of STEEL, Tang end HARDENED and ground. Fitted to gauge.

All Sizes and Styles Carried in STOCK



The Vise

Designed for holding work on the drill table. Made in 5 sizes.

Let us send you a complete set of printed matter

The Skinner Chuck Co.

San Francisco Office:
Rialto Building.

London Office:
149 Queen Victoria St.

Factory and Main Office:
New Britain, Conn.

New York Office:
94 Reade Street

Will You Let Us Show You?

Sweetland Chuck Service Means Greater Efficiency

ADAPTABILITY

DURABILITY

The Hoggson & Pettis Mfg. Co.
New Haven, Conn., U. S. A.

We manufacture a great variety of

Lathe Chucks, Drill Chucks, Centering Chucks
Also
Portable Jaws for Lathe face plates and Machine tables.

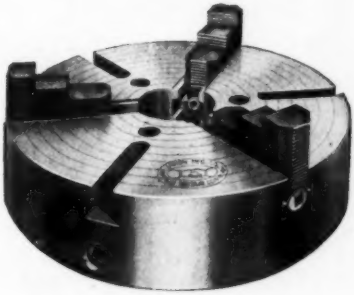
Let us send you our Catalog

The Cushman Chuck Co.

Established 1862 **Hartford, Conn.**

Combination Scroll Chucks

Iron or Steel Body



A Combination Chuck for the Modern machine shop. This Chuck can be used as a Universal, or Independent Chuck.

Two Chucks on your lathe with only the space of one, **no changing.** Solid reversible jaws, three or four jaw style.

WE would be glad to tell you more about this CHUCK

Write Us

Union Manufacturing Co.

New York Office, 26 Cortlandt St. **New Britain, Conn.**

Makers of a Complete Line of Chucks

Investigate

The

"Double-Gripp"

Safety

Tapping Chuck

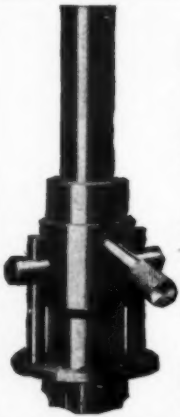
WILLIAM L. PROCUNIER · THE DOUBLE GRIPP · CHICAGO, ILL.

The "Double-Gripp" has the only safety friction that will absolutely prevent tap breakage.

Also note the new way of holding the taps. No bushings or screws required.

Our Big Circular Tells More
Write for it today

William L. Procunier
549 Washington Blvd., Chicago, U. S. A.



Quick Deliveries Of

Murchey Chasers

"Murchey Service" means deliveries—not promises. We have had to expand our factory mighty fast and buy an enormous quantity of machinery to continue making good on "Murchey Service," but we have done it.

Murchey Taps and Dies

are also as superior as our service. And when you combine the two—Murchey Collapsing Taps and Automatic Self-Opening Dies with our prompt delivery of Chasers—you have the right combination.

Won't you put us to the test?

Murchey Machine & Tool Co.
58 Porter St., Detroit, Mich.

An Efficient Workman

because

He's Protected

Remove the possibilities of injury from moving parts of machines in your shops by the use of "Econo" machine and belt guards.

"Make 'em yourself"

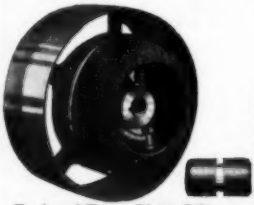
Our free book, "Econo Expanded Metal Machine and Belt Guards" tells the story.

North Western Expanded Metal Co.

931 Old Colony Bldg., Chicago, Ill.

Their Record

Entitles Them to Your Consideration



Enclosed Type, Plain Oiling

Edgemont Friction Countershaft Clutch Pulleys

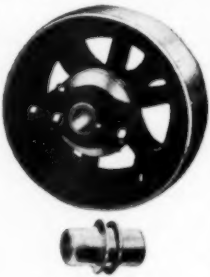
have been used for years by practically all the large machine tool builders of the country (names on request). If they find Edgemont Clutches the best, aren't they at least worthy of your consideration?

Complete catalog and names of users upon request

The Edgemont Machine Co.

Dayton, Ohio

High-Power Friction Clutches



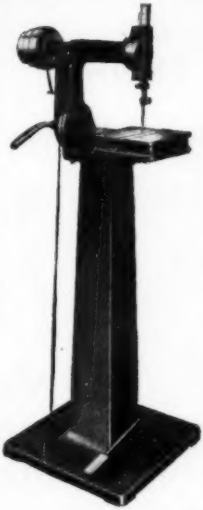
These high-powered Friction Clutches are simple, strong and compact. They are built for *high speed* and *heavy wear.*

The large diameter of friction disc permits a *full uniform grip* around the pulley, making them very *positive in action.* All end thrust is eliminated.

Oil them once in two months, without throwing off the belt, and you will have no clutch troubles.

To know them is to want them. Inquiries solicited.

PASSMAN BROS., 30 S. Green Street CHICAGO, ILL.



Dwight Slate

Marking Machines

Hand and Power In Several Styles

We also make a specialty of

Die Cutting

For these machines

We Have

Expert Engravers

Write for the Marking Machine Catalog

Also the Noble & Westbrook

Up-To-Date Filing Machine

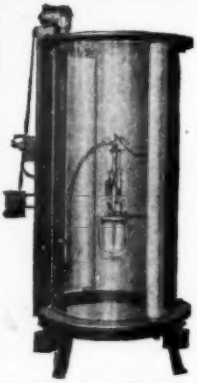
Which is Illustrated Above

This is an exceptionally accurate, convenient and productive filing machine. Hardened roller bearing, adjusted by a knurled screw, eliminates file breakage and increases production. An adjustable chuck permits the use of standard straight files. The stroke is adjustable from 1½ to 2½ inches. Graduated head gives proper angle at a glance. Head may be tilted to any degree. No filings can drop into working parts, which are above the table. All bearings are phosphor bronze.

Complete description will interest you. Your address?

The Noble & Westbrook Mfg. Co.

Hartford, Conn., U. S. A.



Electric Blue Printing Machines

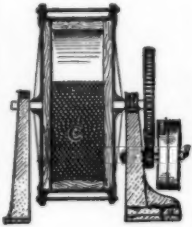
Write for catalog BP No. 1

Shipped on 30 days' trial

Buckeye Engine Co., Salem, Ohio

A Book on Burnishing

Full of Information—and Free



Our copyrighted Book on Burnishing is yours for the asking.

It explains the Abbott Steel Ball Burnishing Process so thoroughly that you can readily understand why it saves from 75 to 99 per cent of the cost of buffing small metal parts, and why it produces such a brilliant polish without marring, bending or breaking anything and without removing any material.

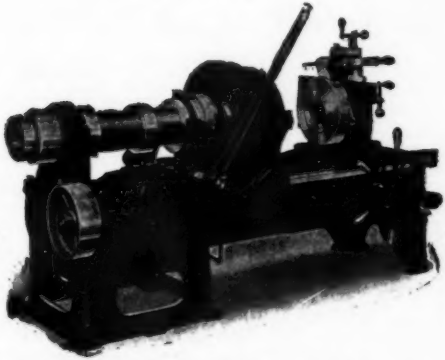
Your copy is ready for mailing. How shall we address it?

The Abbott Ball Company

Elmwood District, Hartford, Conn.

Speed Up Your Pipe Threading

With B. & K. Pipe Machines



TO START WITH, B. & Ks. are the ripe product of 33 years of effort to build machines that are chock full of convenience and lasting wearing qualities—they are good at the beginning, and they stay good. They are all fitted with the famous Peerless Quick Adjusting Mechanism, which adjusts instantly to 1-1000 of an inch without the use of tools.

BUT BESIDES HAVING a high grade machine to offer you, we have so many styles and sizes that we can fit you *with exactly the right one for your needs.* This, also, means lasting economy. B. Ks. take care of pipe from ¼ to 18-inch diameter.

Writing us about your needs places you under no obligation whatever

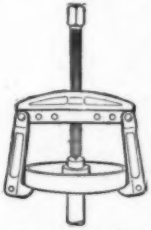
Bignall & Keeler Machine Works

Edwardsville, Ill.

Every Machine and Repair Shop Needs—

"CRANE'S"

New Model Wheel and Gear Puller



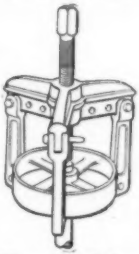
Two-Arm Puller

The most practical device for safely removing fly-wheels, gears, cams, sprockets, collars, couplings, propellers, auto wheels, commutators, universal joints, etc.

Simplifies the work and labor
Economizes in time and expense

Thousands of these tools are in daily use by practical mechanics throughout the world.

The Most Efficient Equipment for Automobile Repair Shops



Three-Arm Puller

MADE IN TWO SIZES
2-Arm and 3-Arm Styles
Designed to meet every requirement

The No. 2 Puller is particularly adapted for the average garage and repair shop, and will stand a strain of six tons.

The No. 3 Puller will meet the general requirements of all kinds of work and will stand a strain of ten tons.

Both No. 2 and No. 3 Pullers are made in 2 and 3 Arm styles and are regularly furnished with two sets of combination hook and extension arms.

Materials & Workmanship Guaranteed

NEW CRANE PULLER FEATURES:

All users of Crane Pullers will appreciate the new attachments.
Kohler Locking Arm—prevents arms slipping off the work.
Pipe Bending and Shaft Straightening Attachment—for bending exhaust pipes, straightening propellers and jack shafts, etc.
Extra Long Beam—for extra long reach on No. 3, 2-Arm Puller.
Arbor Press Base. **Thin Jaw Arms**—for close work.

For Sale by Hardware and Auto Supply Jobbers in all cities
Descriptive Circular on Request

The Crane Puller Co.

54 Lake Street, Arlington, Mass., U. S. A.

A Large Steel Company Recently Ordered 29

Diamond Wet Tool Grinders have all the requisites of a *good* tool grinder:—rigidity resulting from properly distributed weight, long ring oiled bearings, spindle of large diameter, wheel well guarded and held by specially designed flanges, large flow of water supplied by vertical spindle pump with all bearings above water level, wheel not in contact with water when stationary. Above all, good workmanship.

That is why a large Steel Co. has recently ordered 29 Number 5 Motor Driven Diamond Wet Tool Grinders; also because they have used the machines before and know their lasting qualities.

The No. 5 carries a 36" wheel. We also make Number 1, 2, 3 and 4 sizes, belt or motor driven, for 14", 20", 24" and 30" wheels respectively.

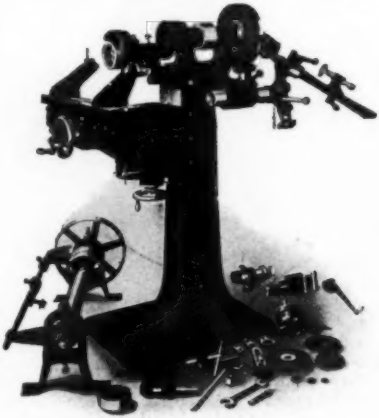
Tool Grinder Catalog H1 sent on request

We also make Floor Grinders and Polishers, Disc Grinders, Surface Grinders, Face Grinders.

DIAMOND MACHINE CO., PROVIDENCE, R.I.

Not the first—But THE LATEST—
the best—the most universal grinder

The Grand Rapids No. 2



Just Think!

CAPACITY: Between centers up to 9½" diam. 20" long, Face Mills up to 12" diam. (with raising blocks up to 16" diam.), Drills up to 2½" diam., and other jobs in proportion.

RANGE: Anything that can be done on any other machine made—*and then some.*

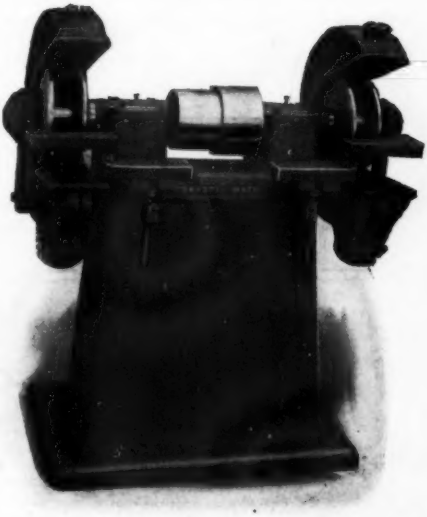
PRICE: So low it will surprise you.

Get the circular today

Grand Rapids Grinding Machine Co.
17 Ottawa Ave., N. W.
Grand Rapids, Michigan, U. S. A.

Grind it

on a "Blount"



No. 6½

Our eight sizes meet all requirements of general grinding work. The large bearings insure accurate work under continuous heavy load.

J. G. BLOUNT CO., Everett, Mass.

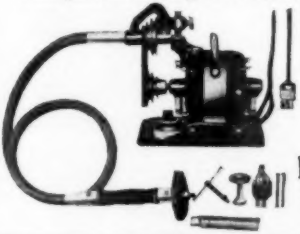
Strand Flexible Shaft Portable Grinder

Made in four sizes: 1-10, ¼, ½, 1 H. P.

Adaptable for heavy or light grinding.

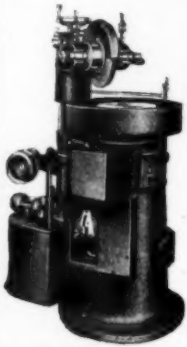
A universal portable flexible tool for every shop.

Tool post or drilling attachment and extra ball-bearing handle furnished also.



Write for catalog today

R. G. Haskins,
547 Washington Blvd.
Chicago, Ill.



12-Inch Bristol

Precision Rotary Surface Grinder

It grinds to within .0004" of a manufacturing accuracy

When will you be ready to look into it?

The C. G. Garrigus Machine Company
Bristol, Conn., U. S. A.

FIRST stands the

Greenfield

Trade Mark Reg. U. S. Pat. Office

The first practical **Universal Cutter and Reamer Grinder** on the market.

And still the best designed, the best built, the best equipped Universal Tool Room Grinder. Known and recognized as first choice wherever machine tools are sold.

Simple, Practical, Convenient

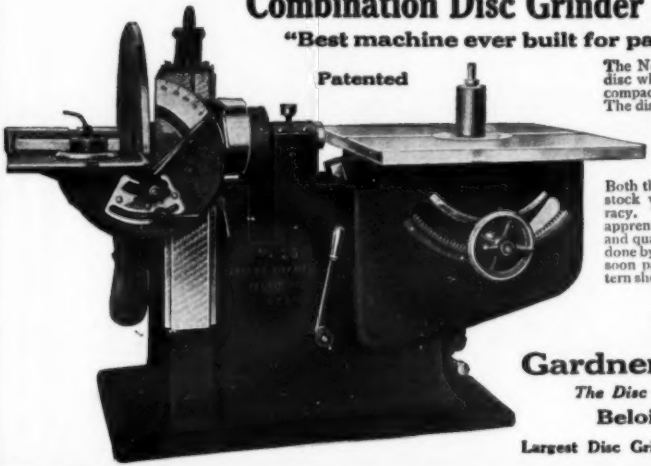
When you want a grinder get the real thing. Literature on application.

Greenfield Machine Company

Greenfield, Mass., U. S. A.

Combination Disc Grinder & Roll Sander

"Best machine ever built for pattern shop use"



Patented

The No. 20 Gardner combines both the disc wheel and the sanding roll into a compact, sturdy and accurate machine. The disc wheel is used for producing flat surfaces and external curves; the sanding roll perfects internal curves which have been roughed out on a band saw.

Both this disc wheel and the roll remove stock with extreme rapidity and accuracy. With this machine at hand your apprentice boy can do, with greater speed and quality, much of the work formerly done by your best man. A Gardner No. 20 soon pays for itself in any modern pattern shop working four or more men.

Get the details today

Gardner Machine Co.

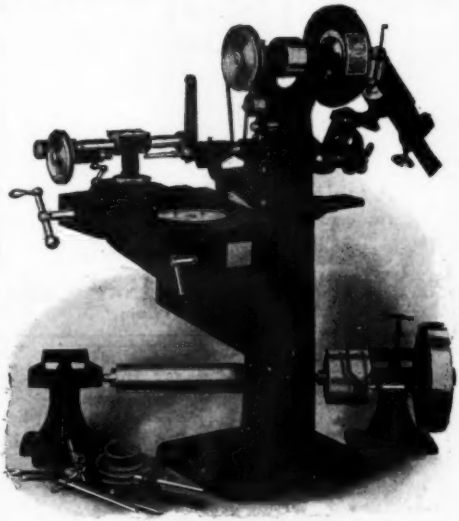
The Disc Grinding Authorities

Beloit, Wisconsin

Largest Disc Grinder Builders in the World

W. & M. Style BX

Cutter, Reamer and Drill Grinder



CAPACITY:

Face and Side Milling Cutters,.....	up to 12" Diam.
Angle and Plain Milling Cutters,.....	up to 8" Diam.
Gear Cutters and Hobbs,.....	up to 5½" Diam.
Reamers (Straight or Taper),.....	up to 17" Diam.
with Flutes not over 11½ in.	

Centers Swing Work, 7¼x17"—11½" Movement.

Full Particulars on Request

Wilmarth & Morman Co.

Makers of Drill—Surface—Universal Grinders

2185 Monroe Ave., N. W. Grand Rapids, Mich., U. S. A.

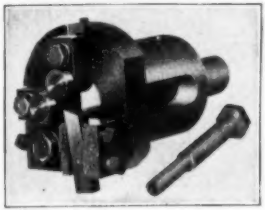
Universal Angle Plate

A tool room and machine shop necessity, built in several sizes.

Write for particulars and prices

Purinton & Smith, Hartford, Conn.
Machinery and Tools

Watson Tangent Cut Box Tools
All Steel



Made in sizes to suit your requirements.

Price and full particulars on request.

The Biggs-Watterson Co.
Cleveland, Ohio

Bench Tapping Machines

No. 1 Taps to ¼"

No. 2 Taps to ½"

Glad to receive your inquiries

E. O. Partridge, Manufacturer

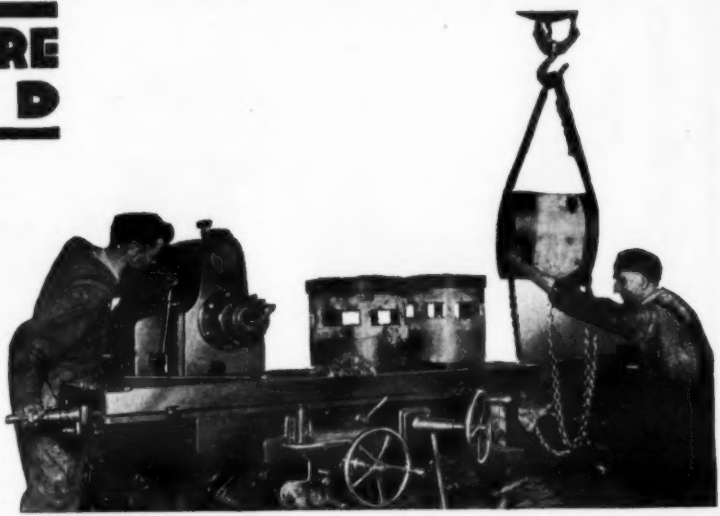
2041-2049 W. Lake St., Chicago, Ill.

RADBORE HEAD

This photograph taken in the plant of Harlan & Hollingsworth Corp., Wilmington, Del., shows an excellent example of typical Radbore Head work.

Note the clean cut exact appearance of these rectangular holes.

Note the man swinging a new part into place—the holes are drilled from the solid.

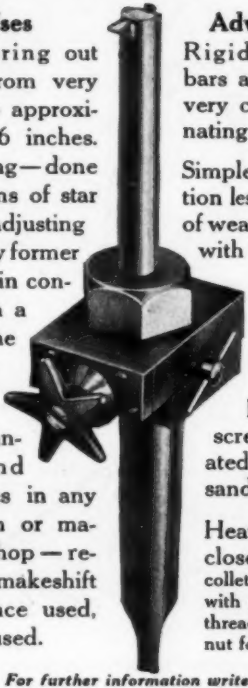


Radbore Offset Boring and Facing Tool

Uses

For boring out holes from very small to approximately 6 inches. For facing—done by means of star nut on adjusting screw, by former coming in contact with a pin on the miller column.

Has a hundred and one uses in any toolroom or machine shop—replaces makeshift bars—once used, always used.



Advantages

Rigidity—these bars are coupled very close, eliminating all spring.

Simple construction lessens chances of wear and abuse with hard usage.

No complicated, eccentric motion.

Micrometer screw graduated in thousandths.

Heavy box nut closes spring collet, doing away with set screw and threaded bars. Star nut for facing.

For further information write to

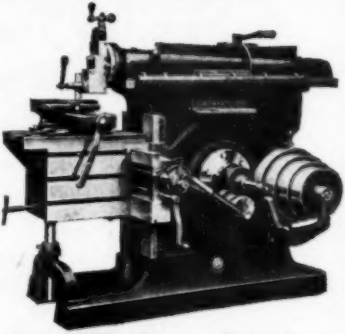
LAWSON & COMPANY, Inc.
147 Cedar Street, New York City

Agents for Michigan, The Chas. A. Strelinger Co., Detroit

SHAPERS

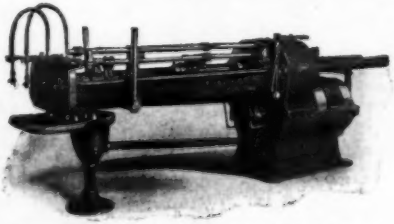
12", 14", 16" Plain Crank, 16", 20", 25" B. G. Crank, either Cone Driven or through Speed Box.

24", 28", 32" Geared Shapers of the Belt Shift type.



The Smith & Mills Co. Station B., Cincinnati, O., U.S.A.

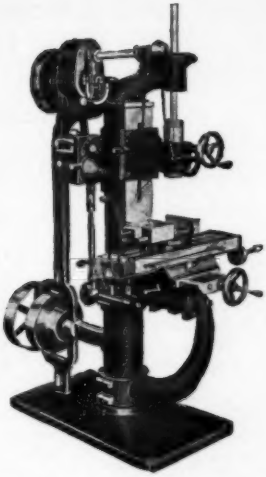
Broaching Machines And Broaching Tools



Our Famous Double Machine

The Most Complete Line In The World. We make our machines in 5 sizes and 11 types. *Send for particulars.*

THE J. N. LAPOINTE CO., - - New London, Conn.



Greater Convenience, Less Cost

On a Large Variety of Machine Work

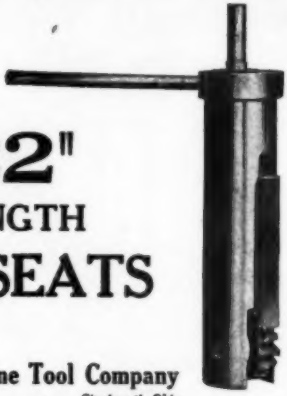
Knight Milling and Drilling Machines rank high in convenience, in labor saving, and in output. They enable you to mill and drill at any angle and in any position without resetting the work. The table is tiltable, insuring the accuracy of every operation.

We make them in three sizes, weighing respectively 2300, 1200 and 600 lbs., and each one will surprise you by its remarkable handiness, economy and general usefulness.

Glad to mail you descriptive folder and to answer questions pertinent to your work

W. B. Knight Machinery Co.

St. Louis, Mo.



22"
LENGTH
KEYSEATS

National Machine Tool Company
2268 Spring Grove Ave., - Cincinnati, Ohio

The Cussedness Of Broken Taps

Removed at Light Expense

The Walton Tap Extractor

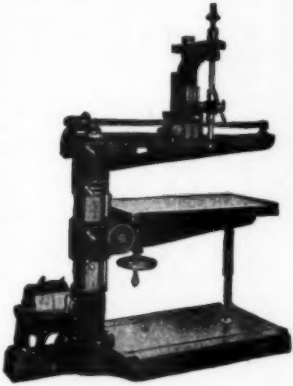
has four special crucible steel prongs or fingers which fit into the flutes, and when a tap is broken at or below the surface it can be backed out without injury to the threads. This ingenious device is simple and effective, and certainly it is inexpensive for the trouble and delays that it saves. It often pays for itself in one using.

Want 60 days' trial? Or folder? Or both?

THE WALTON CO., Hartford, Conn.

Drilling Heavy, Awkward Pieces?

Reduce the Cost With T. & Fs.



THIS 3-FOOT "Sensitive Radial" saves time and money for manufacturers and others who have drilling to do up to ¾-in. in big, hard-to-handle pieces. Some users have doubled and even trebled their outputs with this exceptionally fast machine.

Its pre-eminence as a cost reducer is due in part to our success in working out the problem of adjustments. These are so simple and made so easily that the operator maintains without special effort a high rate of production—thereby saving the fractions of time that others lose. By applying drilling heads of different types it can be made to cover nearly all drilling requirements within its range.

Let us mail you full particulars, including cost records

The Taylor & Fenn Company

Hartford, Conn.

Kelly PRODUCTION Tools

The outfit shown in cut, with three turret bars and 36 type B reamers, gives **any diameter in ten thousandths** from 15-16ths to 5⅜ inches. Each reamer has an adjustment of ¼-inch.

Kelly Boring and Reaming Tools are made for any diameter from 9-16ths to 12 inches and larger.

Write for the Catalog

THE KELLY REAMER CO.
CLEVELAND, OHIO, U. S. A.

C. W. Burton, Griffiths & Co., London, English Agents.
Burton Fils, Paris, French Agents. 40 Domestic Agencies.

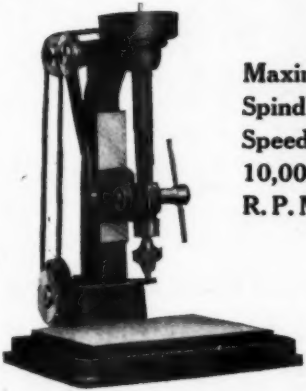
Nicholson Mandrels cut the cost of wasted time. They avoid unnecessary delay and disappointment.

The Nicholson Expanding Mandrel does what it would take a big stock of ordinary mandrels to do, and it does it better, quicker and easier. A set of nine Nicholson Expanding Mandrels are instantly adaptable to any size square or round hole between ½ inch and 7 inches. Test one for 30 days in your own plant. There's no obligation.

NICHOLSON
Expanding Mandrel

W. H. Nicholson & Co.
117 Oregon Street
WILKES-BARRE, PA.

Leland-Gifford Ball Bearing Drilling Machines



Maximum Spindle Speed 10,000 R. P. M.

Patents Pending

If you have drilling under 3/8" dia. let one of these machines replace two or three of your old style drills and still maintain your production.

Send for Bulletin 502

Leland-Gifford Co.
Worcester, Mass., U. S. A.

Drives Taps of All Sizes

And Drives Them True Saving Time and Breakage

There is no screw adjustment—the drive is positive, regardless of the size of shank.

The "Wear-Ever" Tap Chuck

—is made of one piece and hardened. It will outwear several friction tap chucks, though it doesn't cost much.

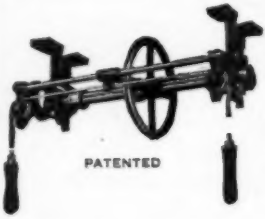
Use it like a drill socket and stick it in the spindle like a drill. It is always ready for work and no time is lost in setting for various size shanks.

Write for particulars and prices

Scully-Jones & Co.

Room 555 Railway Exchange Bldg., CHICAGO

Countershaft *for* Grinder Work



"DALTON" (Patented) Grinder Countershaft, is designed for use on small lathes of all makes, using either Internal or External Grinding Attachments.

The Hangers are universal in adjustment for use upon either ceiling or wall.

Manufactured only by the makers of the "DALTON SIX" Lathe.

Send for Bulletin

DALTON MACHINE CO., Inc., 1911-15 Park Av. NEW YORK, U. S. A.

One of the Many Styles

of

Avey Drilling Machines

This Design Is Well Adapted for Tool Room Work

Avey Ball Bearing Drilling Machines

High Grade for High Speed Work

Originators Of The Super Sensitive Drilling Machine

The Cincinnati Pulley Mchy. Co., Cincinnati

The Fenn No. 1

Friction Tapping Machine

So economical in its operation that it makes hand tapping extravagant.

Better than any gear-driven machine. Owing to its sensitive drive, it eliminates the spindle strain to which all gear-driven machines are subject, and saves the taps.

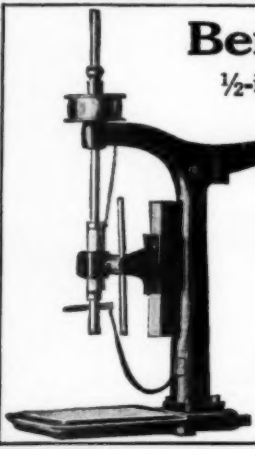
Quick to reverse, with a wide range of speed changes in either direction.

Also made in the bench type. Capacity, up to 3/16 inch.

We invite careful investigation

Fenn Manufacturing Company
Hartford, Conn.

Cable Address "Fenn." West. Union Code
W. L. Fenn W. A. Fenn
(Formerly of the Taylor & Fenn Co.)

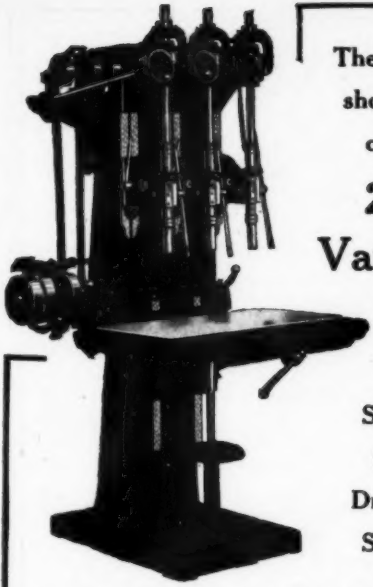


Bench Drill

½-in. Capacity

An "A-1" Tool
at Low Price.

Francis Reed Co.
Worcester, Mass.



The Picture shows one of our

252 Varieties

with 1 to 8 Spindles for ¾" Drills and Smaller

Large Concerns have standardized their drilling equipment with Henry & Wrights because, by actual test, they found them the greatest economizers of time and labor. A gearless power transmission and frictionless bearings, with other practical improvements and refinements which are fully described in our literature, are the reasons why they reduce drilling time and labor cost to bed-rock.

252 Varieties also enable the user to pick out the precise machine best adapted to his particular purpose.

May we tell you all about them?
And present you with our Feed and Speed Chart?

The Henry & Wright Mfg. Co.

706 Windsor St., Hartford, Conn.

CELFOR HIGH SPEED
Drills of Highest Quality

IT'S AN OLD SAYING, "Quality counts," but worth repeating and remembering. Whether you are buying locomotives or drills, it pays to get the article that will serve you most efficiently, economically and satisfactorily.

CELFOR HIGH-SPEED DRILLS are a specialized product, made from selected high speed steel, and twisted hot; they drill longer without grinding; they cut more freely; they consume less power; they have maximum chip clearance; they reduce drill breakage to a minimum.

We can serve you with the best of the following:

Drills, Twist	Drills, Rachet
" Flat Twist	" Oil Tube
" Flat	" Blacksmith
" Bonding	" Three Fluted
" Track Bits	" Four Fluted
" Centering	" Flue Sheet

Our Catalog should be on your Desk

Clark Equipment Co.,
Buchanan, Mich.

ITS A TRADE MARK SIPP

FEATURES

Quick Change Speed
Change in 2 seconds

Most Efficient Drive
No belt troubles

Safety First
All parts protected

Heaviest Drill Made

All Ball Bearings

No Vibration at Highest Speeds
on
The Sipp Quick-Change-Speed Drill

because it weighs 20% to 50% more than other drills. This is important. Everyone knows how objectionable vibration is—how difficult it makes accurate work. The SIPP has that massiveness that makes vibration impossible.

Write for details

The Sipp Machine Co.
Keen St. **Paterson, N. J.**

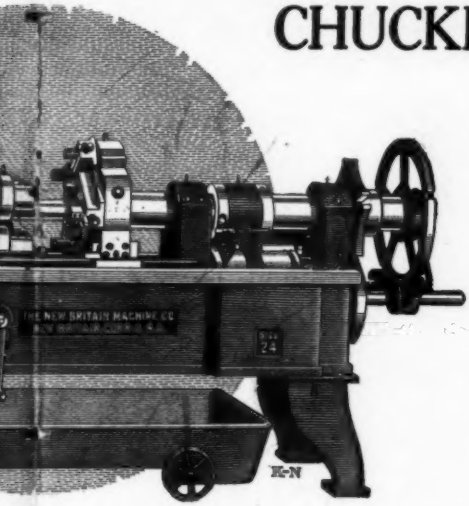
"CONTINUOUS

The combination of a *simultaneous performance* of all operations about a common center with *continuous chucking* explains the wonderful productive capacity of "New Britain" Automatics in the machining of castings, forgings and second-operation screw machine work.

The Single-Head Automatic, shown in the illustration, is built with either four or five tool-carrying spindles. Machine has one more work-holding chuck than spindles, so it may be loaded and unloaded without interruption to the machining operations. The Double-Head Machine finishes both ends of work simultaneously.

NEW BRITAIN

CHUCKING"



It is this unusual combination of continuous chucking with the working of all tools at once which explains why "New Britain" Automatics easily *increase production from 300 to 500 per cent.*

We shall also be glad to explain the other reasons—covering accuracy, convenience, stability, etc.— why the Packard Motor Car Co. has 37 in operation—why other progressive manufacturers are using them in quantity—and why we can save you money; and if you will send us blue-prints of your chuck work we shall be glad to submit guaranteed estimate of doing it "the New Britain way."

AUTOMATICS

JOHNSON

BUSHINGS

and

Cored Bronze Bars

Bushings—machined or in the rough—to your specifications or from over 1500 stock patterns.

Cored Bronze Bars for repair work. Over 40 different size bars each packed separately in carton. Special garage assortments.

Write Dept. H. L. for prices

JOHNSON BRONZE CO.

Formerly The American Car and Ship Hardware Manufacturing Co.

NEW CASTLE, PA.

B&S CUTTERS

They
Meet
The Most
Exacting
Requirements

B·S
TRADE MARK

both in accuracy and fast production. Like the entire line of B. & S. Cutters, Brown & Sharpe Gear Cutters are standing up under the hardest kind of service in shops everywhere.

Send for Catalog 27 TODAY

BROWN & SHARPE MFG. CO.,
PROVIDENCE, R.I., U.S.A.

YOU Want Tool Holders that have MADE GOOD

Armstrong Tool Holders

Were Awarded The

Grand Prize

The Highest Possible Award at the Panama-Pacific International Exposition—1915

They Always Make Good

They Are Used in Most of the Big Machine Shops of the World

Send for Catalog

Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

Accurate Tapers

Here is an inexpensive device which enables you to detect the slightest inaccuracy in tapers easily and quickly. It is called the—

Hartford Taper Gage

When you have used one for a little while you will want to equip your entire factory with them. That is what our customers are doing right along, one of them now having 32 in use. Re-orders like those are the best possible evidence of real value.

You are next. Your address, please?

Hartford Special Machinery Co.

285 Homestead Ave., Hartford, Conn.

Carry Your Grinder to the Work

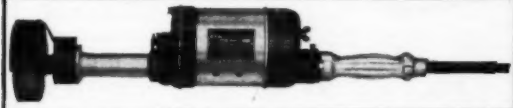
Not Your Work to the Grinder

Thor

Portable Electric Grinder

Equipped with a universal motor for operating on direct or alternating current, 110 to 250 volt.

(Licensed under Burke Universal Motor Patent)



No. 6 Grinder, Wheel 4"x¾"x½"
Attach to Any Lamp Socket

Thor Portable Electric Grinder is equipped throughout with ball and roller bearings and a specially constructed motor—insuring speed, power, ease of operation and increased capacity.

It Runs at 4500 R. P. M.

Independent Pneumatic Tool Company

Chicago New York Pittsburgh Detroit
San Francisco Birmingham Montreal

A Wonderful Combination

In Riveting

Speed: one rivet per second.

Uniformity: each rivet headed with same degree of tightness or looseness as desired.

Finish: perfectly formed rivet heads, highly polished surface, no hammer or tool marks shown.

GRANT Noiseless Rivet Spinning Machines, are the only machines built that will accomplish the above.

Catalog ?

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

Efficient 7" Crank Shaper

Rhodes Horizontal Is Economical

Designed and constructed for light and thoroly accurate work, this small shaper has all the essential features of the large, high priced machines. We build them horizontal, vertical, and a combination of the two.

They are light running and easy to handle, and for economical work on dies, tools, models, etc., their equal does not exist today.

Let us send you full description of these modern, improved machines

Rhodes Mfg. Co.
Hartford, Conn.

Pedrick Lathe Boring Bars

There are many times when you could profitably use one of your lathes for boring—if you only had the proper appliances at hand.

We can equip you for such work with one of our Lathe Boring Bars. They are made in diameters from 2½" to 6" and various lengths, with a large assortment of cutterheads to meet miscellaneous requirements.

The lathe provides the power, and each bar has a two-change constant feed, hand-controlled or automatic. The bar is rigidly held and is easily taken down and reset without changing the alignment.

Put your boring problems up to us. We have all kinds of new boring machines, from our Standard Portable Cylinder Boring Bar to our new Floor Boring Machines.

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.

Builders of Portable Cylinder Boring Bars, Crank Pin Turners, Portable Millers, Pipe Benders, etc.

Vul-Cot Fibre

(a higher development of Vulcanized Cotton Fibre)

You can turn, cut, drill, bore, tap or thread Vul-Cot Fibre sharply and accurately to 5-1000 of an inch. This adaptability makes it equally useful for small, noiseless, voltage protecting parts of machine tools—as for gears, pinions, discs, rings, washers, gaskets, etc.

Vul-Cot Fibre may be had in sheets, rods, tubes and bars, standard ready machined parts or special parts machined to your own specifications.

Write for samples and particulars.

American Vulcanized Fibre Company

560-570 Equitable Building, Wilmington, Delaware

Complete stock for immediate shipment at Chicago

Steel Handles

For Power Tools, etc.
We can save you money.

The Price, on account of quantity production, is below the manufacturing cost of cast iron or forged handles.

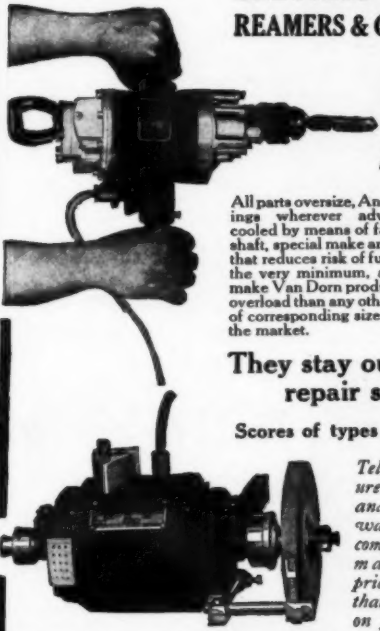
In Quality there is no comparison. They are accurate, highly finished, and ready to attach. Let us show you.

Write for Catalog of Standard Handles, prices and discount.

The Cincinnati Ball Crank Co.

Oakley, Cincinnati, Ohio

Van Dorn PORTABLE ELECTRIC DRILLS, REAMERS & GRINDERS



For Hard Service

All parts oversize, Annular Ball Bearings wherever advisable, motor cooled by means of fan on armature shaft, special make and break switch that reduces risk of fused contacts to the very minimum, all combine to make Van Dorn products carry more overload than any other electric tools of corresponding size and weight on the market.

They stay out of the repair shop

Scores of types and sizes.

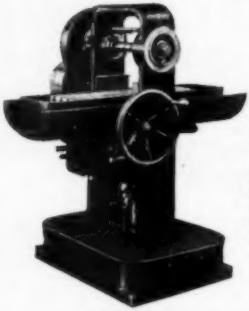
Tell us the nature of your work and we will forward promptly complete information and prices on tools that won't stall on your work.

THE VAN DORN ELECTRIC TOOL CO.

GENERAL OFFICES AND WORKS, CLEVELAND, OHIO

New York, N. Y., 30 Church St.
Boston, Mass., 170 Purchase St.
Baltimore, Md., 339 Title Bldg.
Chicago, Ill., 601 Monadnock Bldg.
Pittsburgh, Pa., 701 Empire Bldg.
Cincinnati, O., Second Natl. Bank Bldg.
Atlanta, Ga., 1018 Healy Bldg.
St. Paul, Minn., American Nat'l Bank Bldg.
Kansas City, Mo., 1311-13 Baltimore Av.
Denver, Colo., Ideal Bldg.
San Francisco, Calif., 515 Mission St.
Los Angeles, Calif., 325 Security Bldg.

For Form and Gang Milling



Briggs High Duty Milling Machine

Designed for wider and heavier cuts.

Takes the full power of a 3½-inch double belt.

The Briggs is especially adapted to form and gang milling on steel parts for automobiles, guns, etc., and for difficult or heavy milling of any kind. Use it and increase your output.

Designed on original lines
Send for description today

GOOLEY & EDLUND, Inc., Cortland, N. Y.

This is our

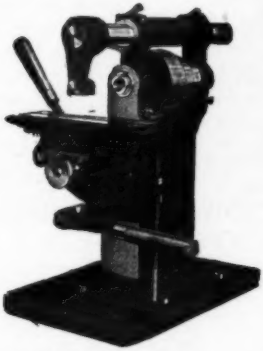
No. 1 Bench Miller

This Machine has been a wonderful success on ammunition work.

Ask for Catalogue of Complete Line

The Burke Machine Tool Company
Conneaut, Ohio

"BURKE"
No. 3 Milling Machine



Longitudinal feed of table	6 inches
Traverse feed	3¼ inches
Vertical motion to knee	8¾ inches
Maximum distance between center of spindle and table	7 inches
Working surface of table	3½x12 inches
Greatest distance between centers (6-inch swing)	2⅜ inches
Largest diameter of cone	6 inches
Smallest diameter of cone	3½ inches
Driving belt	2 inches
Taper hole in spindle	B. and S. No. 9
Hole in spindle	½ inch
Height over all	25½ inches
Loose pulley on countershaft	7x2¼ inches
Speed of countershaft	280 revolutions
Weight complete	235 pounds
Weight boxed	300 pounds

Ask for Catalogue of Complete Line

The Burke Machine Tool Co.

Conneaut, Ohio, U. S. A.

In A Class By Itself

Is our New Model Bench Miller; because we furnish with the machine our Quick operating Lever Vise, also Index Centers and two speed friction countershaft.

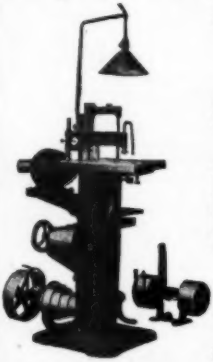
Send for circular

The Carter & Hakes Co.

West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co., Chicago, St. Louis, Indianapolis.

Why Use a Rearwin Die Filer?



Some Good Reasons

Because it is powerful.

Because it provides for the use of standard or special files from 3 in. to 12 in.

Because it relieves file from work on the up-stroke; it has a large table with improved arm to hold down the work; because it has a wide range of adjustment, and it is well balanced.

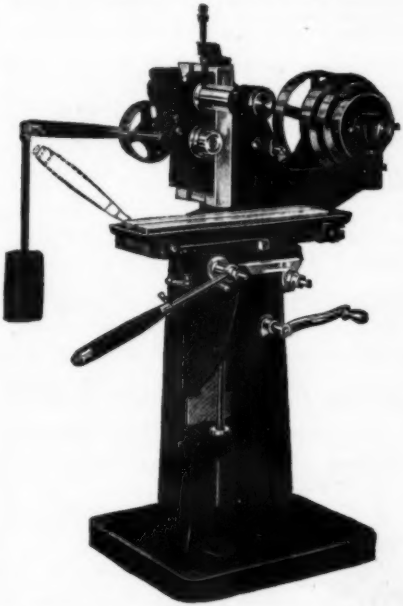
An interesting circular is yours for the asking

W. D. Rearwin

341 Mill Av., N.W., Grand Rapids, Mich.

"Whitney" Hand Miller

THOUSANDS IN USE



A machine you will find use for every day of the year. The handiest machine for light milling, keyseating, profiling, die sinking, gear cutting, etc.

Prompt Deliveries

The Whitney Mfg. Co., - Hartford, Conn.

Chains—Keys—Hand Milling Machines

Use Any Standard Motor

With a Euclid Hoist and thus have your hoist motors standard with your other electrical equipment. The construction of Euclid Hoists

ELECTRIC EUCLID HOISTS

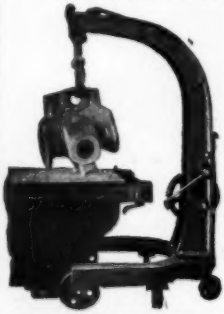
makes possible this advantage, the value of which is at once apparent.

Our new catalog will interest you if you use hoisting equipment. Write for it.

The Euclid Crane & Hoist Co.
Dept. C **EUCLID, OHIO, U. S. A.**

1 Canton Relieves 6 to 10 Men

Enlist Canton Cranes for Your Work



Since it has become a patriotic duty to economize wherever possible, you cannot afford to overlook what

"The Handiest Tool In the Shop"

could do for you in the way of lifting and carrying castings and machinery in perfect safety. Your choice of many sizes. Booklet E-8 tells you all about them.

"A Crane in time saves nine"

CANTON FOUNDRY & MCHE. CO., Canton, O.

Don't Wait

For the Law to Enforce the Installation of Sanitary Steel Lockers in Your Factory

Some states require them now in certain cases. They soon will be in more states and more industries, ***because it is right.***

And if you are convinced it is right, we believe you will do it, whether the law requires it or not, and that is the point we want to make clear.

We believe it is right that workmen be provided with sanitary receptacles for their belongings; and that can be provided only in metal.

And it also pays. Lockers are a permanent need, and the only permanent kind are made of steel. And permanent lockers show by far the greatest ultimate economy, especially under the sectional unit plan, which permits installing what you need now, and adding to it or re-arranging as new conditions require.

Write for the Catalog

Terrell's Equipment Company

Hall & Division Sts., Grand Rapids, Mich.

And ask about our Adjustable Unit System of Shelves and Bins, which are easily changed from one to the other, or removed, extended or reduced to fit changing conditions, either with or without steel doors.

Arbor Presses

Any width.

Any tons pressure.

Easiest and quickest hand press made.

Quick Acting

Power Presses

with

Automatic Regulation

Type I

Hydraulic Machinery

Any Capacity

for

Any Pressing Purpose

Write for catalog

LOURIE MFG. CO. Springfield, Illinois

No. 24 Press

Efficient Equipment

Atlas Presses

for building and repairing automobiles and general machine shop operations requiring pressure up to 25 tons and centering capacity up to 38 inches.

For driving mandrels; bending and straightening, broaching, embossing with dies, setting bushings and many other every day manufacturing jobs, there is an Atlas Press. All sizes for all purposes. ***It will pay you to investigate.***

Atlas Press Co.

317 N. Park Street,
Kalamazoo, Mich., U. S. A.

Cap.

20

Tons

Price

56.00

Net

WEAVER

Forcing Press

WE ARE SPECIALIZING upon this one size and style of press. It is the ONLY press we make, therefore we are able to produce a better article at less money than were we compelled to carry the overhead necessary to produce a great variety of styles.

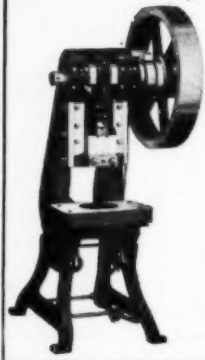
5-inch, 9-pound channel steel frame, 32-in. wide, 15-in. hand wheel, carried upon ball bearings. Bronze Thrust Bearings, Screw 2 in. in diameter with 3-pitch Acme thread. Range of movement, 12 in. The screw does not revolve.

Net Price (32-in. Width) $56.00

Weaver Manufacturing Co.

2179 So. 9th Street, Springfield, Illinois

Here Is A Press



With Plenty of Steam Back of THE PUNCH

HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and inclinable types. Their great power backed by rigid design enable them to do the work you demand and stand up to it.

Write For Catalog

Rockford Iron Works
Rockford, Ill.

The Inexpensive "Handiest Racks"

Keep Expensive Stock Straight

Pipe, shafting and bar stock is worth a lot of money today. Economy requires that you store it where you can keep the sizes properly separated and counted.

"The Handiest Racks" enable you to pile them separately and and neatly, to get at them easily and with less danger of accident, and to economize in space.

You pay a small price only once for "The Handiest Racks;" they last forever, and assist greatly in storing and handling costly material.

Users are re-ordering
Won't YOU investigate?

Wm. S. Yohe Supply Co.
232 Second St., S. E., Canton, Ohio

Tucker's Safety First

Oil Hole Covers

Require but one hand to pump in the oil. Adapted to all kinds of mechanism having oil holes leading to a bearing, and locate the parts to be lubricated.

Send for Catalogue Oil Hole Covers No. 5

Style G

Closed

Open

Style E

Style C

Style F, Drive

Style A

Style D

Open

Closed

Style B

Rotary Head

W.C. & F.C. TUCKER, Hartford, Conn.

Pattern Shop Machinery

Special Prices if you refer to this ad.

Band Saws

Chicago No. 00 27 in. Wheels
" No. 0 32 " "
" No. 1 36 " "

Saw Tables

Chicago No. 5 Stationary Table
" No. 9 Tilting Table
" No. 10 " "
Boring attachment if wanted.

Jointers

8 in., 5 and 6 ft. tables and guard.
12, 16, 20, 24 and 30 in., 7 ft. tables and guard.

Trimmers, Lathes, Core Box Tools, etc.

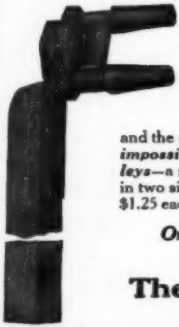
Ask for full descriptions

Chicago Machinery Exchange

1214-1228 Washington Boulevard, Chicago

Don't Be Too Busy To Be Human

Stop a Moment for Safety's Sake



Thousands of accidents occur because employers are too busy to look into safety devices, and they put it off. But it will take you only a moment to send an approval order for a few

"Safety First" Belt Sticks

and the deed is done. ***They make accidents impossible in putting belts on moving pulleys***—a good thing for you and the men. Made in two sizes, 1 to 4 in. and 4 to 6 in., at one price, $1.25 each or $12 a dozen.

Order NOW and PREVENT that accident

The Ready Tool Co.

Bridgeport, Conn.

Contract Work Wanted

This department is exclusively for the use of those desiring to secure contracts for anything in the line of foundry or machine work, including press work, dies, jigs, fixtures, gears, die castings, drop forgings, screw machine products, springs, bolts, nuts, rivets, etc. Advertisements are to be set with side headings as shown, and with such display as may be appropriate to the copy used. Rates: one-eighth page, per month, $4; per year, $40.

Gray Iron and Semi-Steel Castings	**The Smith & Winchester Mfg. Co.** **South Windham, Conn.** Let us estimate on your requirements. We have skilled men and first-class shipping facilities.
Dies, Tool General Machine Work	**Chicago Die & Machine Works** **415 N. Carpenter St., Chicago, Ill.** We are equipped to render satisfactory service on all kinds of general machine work. No job too big or too difficult. Established 1876.
Sheet Metal Stamping Dies and Tools	**Walter L. Schultz** **29 So. Clinton St., Chicago, Ill.** We solicit your inquiry for sheet metal stamping. Manufacturing a specialty.
Milling Machine Products	**Blakeslee Mfg. Company** **Du Quoin, Ill.** We are equipped to handle milling machine work (No. 3-B B. & S.), brass, bronze and grey iron castings. Send blue prints or samples for estimate.
Jigs, Dies, Tools Stampings Electro-Plating	**Rockford Metal Specialty Co.** **Rockford, Ill.**
Sheet Metal Stamping	**Frank B. Lothrop Co.** **South Acton, Mass.** **Blanking, Bending, Deep Drawing, Nickel Plating.**
Sheet Metal Stamping and Manufacturing	**O. D. Johnson Stamping Works** **Batavia, N. Y.** We solicit your inquiries for light sheet metal stamping and manufacturing of specialties.

Dies, Gauges Jigs and Fixtures	**A. N. Van Deman** **95 William St., New York City** Model and experimental work; special machinery built to order; contract manufacturing. Finished parts, of intricate shapes, accurately produced from electrolytic copper
Tools, Dies Jigs General Machine Work	**Commercial Motor Car Co., Inc.** **Owego, Tioga County, N. Y.** Screw machine products. Efficient service and prompt deliveries. Send us your blueprints for quotations.
Machine Work	**The Knight Manufacturing Co.** **1510 Market Ave., S., Canton, Ohio** Lathe, planer, milling machine, gear cutting and drill press work, on contract or hourly basis. Mail us your blue prints for estimates.
Dies, Tools, Jigs, Gauges Model and Experimental Work	**The Ideal Machine & Tool Co.** **128-130 Opera Place, Cincinnati, Ohio** We design and construct tools and machines for special purposes and manufacture metal specialties in quantities to order. We also make a specialty of developing and perfecting inventions. No charge for estimates. Write us today.
Light, General Machine Work Punch Press and Screw Machine Work	**The Apex Electrical Mfg. Co.** **Cleveland, Ohio** We offer for immediate service a portion of our factory facilities, especially adapted for die work, hand and automatic screw machine work, polishing, buffing and assembling, together with men experienced in light electrical construction.
Screw Machine Products	**The Homer Commutator Co.** **4748 Hough Ave., Cleveland, Ohio** We can give entire production of three four-spindle No. 55 National Acme machines for an unlimited time. The capacity of machines is 1⅝".
Special Machinery Tools and Patterns	**Jones Machine Works** **60½ and Media Sts., W. Philadelphia, Pa.** We have a finely equipped factory for the manufacture of special machinery and accurate tool work. Fine work and prompt deliveries guaranteed. Also a well equipped pattern shop.
Want Orders for Die Casting?	**This is the place where you can offer your facilities to users of metal products everywhere in the United States. Many readers of the Tool List are in the market for die castings, and they would welcome information as to what you can do for them.**

General Machine Shop and Foundry Work	**Southern Engine & Boiler Works** **Jackson, Tenn.** Fifty years' successful operation our record. We have a large and well equipped machine shop, also foundry. Plenty skilled labor. Can handle large and small work. Would like contract for a number of large machines, also for automobile parts and other machinery.
Work for Your Idle Equipment	**You can get it, if you will let manufacturers know just what you can do. Tell them through this department. The cost is small; the distribution covers the metal manufacturing people everywhere in the United States.**
Pressed and Stamped Steel Parts	**Geuder, Paeschke & Frey Co.** **1325-1700 St. Paul Av., Milwaukee, Wis.** It will pay you to let us figure on such pressed, stamped or drawn metal articles or parts as you may require, be they made of steel, aluminum, brass or copper. Our 15-acre plant at your disposal. Get the benefit of our "Knowing how since '81." Send samples or blue prints for est.
General Machine Work Brass Founders	**Gray's Engineering Works** **3202-8 Market St., Galveston, Texas** We have ample facilities for all classes of machine work, with good men and up-to-date machines. Would like to hear from good concerns having castings or forgings to machine. Have trackage.

Want More Orders?

They are to be had for special contract work in machining, stamping, forging, casting, welding or any department of machine manufacturing. The problem is merely to bring the capacity and the demand for it together. If you have the idle capacity, and want work for it, the "Contract Work Wanted" department of the Tool List will help you to get in touch with machine-making plants everywhere in the United States. Its circulation among American metal working plants is country-wide. There is no other available means by which you can reach so many.

Don't let your equipment stand idle. That costs money—a lot more than it will cost you to find work for it. Write me for further information, and for a copy suggestion, which I shall be glad to make without cost or obligation.

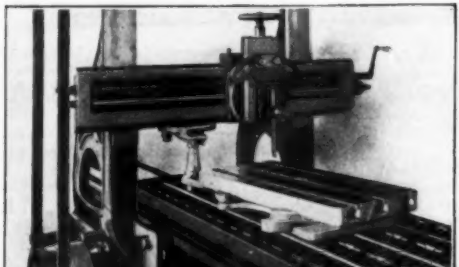
A. H. Hitchcock, Publisher

Hitchcock's Machine Tool List

1220-1235 Caxton Building, Chicago, Ill.

Planes Curves of Any Radius

Underwood's Radius Planer Attachment



THIS SIMPLE DEVICE has no superior for planing curves of any radius, and perfectly parallel curves. It does absolutely accurate work on all kinds of links, blocks and circular work, on any ordinary planer. A scale for setting to any radii furnished when desired.

DO YOU KNOW that our Portable Tools often enable repairs to be completed in the time ordinarily spent disconnecting and moving the defective parts? Our comprehensive line now includes:

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; armature and axle bearing borers; pipe benders; locomotive cylinder borers; boring bar for lathe work; crank pin turners; reflex water glass grinders; rail saws; motors, etc.

We've been making 'em for nearly 50 years—send for our Catalog

H. B. Underwood & Company

1016-22 Buttonwood St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **40 cents a line**, across the page, each issue. Minimum charge, **$4.00.** Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you require is not listed, use the blank enclosed to make known your wants to the publisher.

FOR SALE BY

Jervis Foundry & Machine Co., - - Decatur, Ala.

HEATER.

Hopper's open heater, 30″x5½′.

STEEL.

10 Sheets tank steel No. 8, 72x144.
30 Channels, 5″x12′.

FOR SALE BY

F. H. Kappen & Son, Agents, 93 W. Water St., Milwaukee, Wis.

Air compressor, 6x6x7 steam driven.
Bolt cutter, 1″ Wells.
Cold saws, Burr and Burke.
Drill presses, Rockford ,sensitive.
Drill press, 24″ Prentice, sliding hd.
Drill press, 20″ Mechanics, w. & l.
Drill press, 20″ American, w. & l.
Drill press, 4-spindle.
Engines, steam and gasoline.
File sharpener, American.
Grindstone frames, 48″x8″.
Lathe, 24″x12′ A. & C., pl. r., $175.
Lathe, 24″x12′ Lodge & Davis.
Lathe, 16″x6′ Barker, comp. rest.
Lathe, 9″x5′ Seneca Falls, ft. power.
Lathe, Waltham Precision, c. r.
Press, 12″ Barnes, arbor.
Punch and shear, A½ New Doty.

FOR SALE BY

W. L. Perkins, Jr., 30 Church St., New York City.

Bolt cutter, 2½″ Acme, single head.
Boring mill, 42″ Niles car wheel.
Hammer, steam, 2500 lbs. Bement, single frame.
Hammer, steam, 4500 lbs. Bement, double frame.
Lathe,20″x 6′ Plaisdell,c.r.,cross fd.
Lathe,20″x 8′ Blaisdell,c.r.,cross fd.
Lathe, 26″x16′, shell boring.
Lathe,40″x12′Fitchburg,c.r.,cross fd.
Lathe, 40″x18′, shell boring.
Lathe, 80″ Bement, dbl. hd. wheel.
Miller, 24″x14′ Bement, slab.
Miller, 20″ Sellers, vertical.
Planer,24″x24″x6′Gray, single head.
Planer, 30″x30″x6′ Pond, 1 head.
Planer, 36″x36″x12′ Niles, 4 heads.
Planer, 42″x42″x10′ Putnam, 2 hds.
Punch, No. 3 Long & Allstatter, spacing.

FOR SALE BY

Badger-Packard Mchy. Co., 133-139 W. Water St., Milwaukee, Wis.

LATHES.

9″x4′ Star No. 10-E.
11″x5′ Star No. 30-P.
12″x4½′, Martin Fox.
13″x7′ Shepard.
20″x10′ Blaisdell, c. r., solid sp.

MISCELLANEOUS.

Drill press, 28″ Hoefer, b. g.
Grinder, plain and surfacer, LaSalle.
Grinder, water, 20″ Diamond No. 6½.
Grinder, plain cutter and reamer, No. 160 Wells.
Grinder, drill and reamer, Wilmarth & Morman.
Oven furnace, No. 26 Stewart gas burners.
Hammer, drop, 100 lb.
Planer, 26″x26″x6′ Pond,one head on cross rail.
Press, bench, Niagara, foot power.
Pipe mch., No. 1 Merrill, complete with c. s. ½″ to 2″ capacity.
Press, H. W. Dopp, foot power.
Shaper, b. g. crank, 18″ Juengst.

SECOND-HAND MACHINERY

FOR SALE BY

New York Machinery Exchange, 50 Church St., New York City

BORING MILLS.

Niles 2-spindle floor boring machine, two 4½" bars; motor driven.
10' Poole heavy duty vertical, two heads; motor driven.
60" Bullard vertical 2 heads. (2).
50" Bullard vertical, 2 heads.
34" Rogers vertical, turret head (4).
30" Bullard vertical, turret head,(5).
No. 1 Barrett horizontal, 3¾" bar.
Binsse horizontal, 3" bar; motor dr.
Betts horizontal, 3" bar.
Pratt & Whitney horizontal, 2¾" bar.

HAMMERS.

10,000 lb. Sellers, double leg steam.
5,000 lb. Sellers, double leg steam.
5,000 lb. Bement, dbl. leg steam, (2).
3,500 lb. Sellers, double leg steam.
2,800 lb. Sellers, single leg steam.
2,000 lb. Morgan, steam drop.
1,600 lb. Bement, sgl. leg steam. (2).
1,500 lb. Pratt & W., board drop.
1,100 lb. Miles-Bement, sgl. leg steam.
1,000 lb. Sellers, single leg steam.
750 lb. Toledo, rope drop.
400 lb. Minor-Peck, board drop.
300 lb. Bradley, upright helve, (2).
200 lb. Bradley, upright strap.
200 lb. Bradley, compact hammer.
100 lb. Niles-Bement-Pond, hand dr.
75 lb. Bradley, upright strap.
60 lb. Bradley, cushioned helve. (4).
50 lb. Bradley, upright strap.

MILLING MACHINES.

No. 3-S Cincinnati universal.
No. 3-B Milwaukee plain.
No. 3 Cincinnati plain.
No. 2 Hendey-Norton universal.
No. 2 Cincinnati universal.
No. 2 Cincinnati plain, dividing heads, (2).
No. 2 Cincinnati plain.
New No. 1½ American improved, pl.
No. 1 Kempsmith plain.
Beaman & Smith 2-spindle vertical.
Hilles & Jones vertical.
Newton slab, 36" between housings.

GEAR CUTTERS.

24" Brown & Sharpe auto., spiral.
24" Brainard automatic.
24" Schuchardt & S. gr. hobber.
24" Whiton automatic.
20" Gould & Eberhardt gear hobber.
19"x5" Grant-Lees auto. gr. hobber.
No. 12 Brown & Sharpe auto., (2).

GRINDERS.

10"x36" Thompson universal.
10"x24" Norton plain.
8"x24" Bath, universal.
6"x32" Norton, plain, (2).
No. 12 Brown & Sharpe, plain.
3' Pratt & Whitney vert., surface.
No. 2 Brown & Sharpe, surface, (2).
Diamond, surface table, 12"x24".
8"x18" Saxon, surface.
6"x12" Whitney, surface.
No. 75 Heald, internal.
No. 1½ Landis, internal.
No. 1 Brown & Sharpe, internal.
6"x72" Buffalo automatic, knife.
No. 1½ Cincinnati universal, cutter.
New "BX" Wilmarth & Morman "Yankee".

RADIAL DRILLS.

4' Fosdick plain, tapping att., (2).
4' Dreses plain.
4' Niles plain.
3½' Prentice plain, tapping att.
3½' Niles plain, (2).
3½' Gang plain.
2½' Gardam semi-universal.

PLANERS.

16' Dunkirk plate planer.
16' Sellers plate edge planer.
14' 6" Sellers plate planer.
80"x80"x16' Bement, 3 heads.
60"x46"x16' Enterprise.
55"x46"x14' Lincoln Stone.
48"x48"x16' Belmar, 4 heads.
48"x48"x12' Powell, 3 heads.
48"x36"x10' New Haven.
44"x42"x17' Betts, 2 heads.
40"x40"x15' Pratt & Whitney.
40"x40"x10' New Haven.
36"x36"x12' Niles.
32"x32"x10' Gray, 2 heads.
32"x32"x10' Pond.
32"x32"x8' Gray, 2 heads.
28"x28"x7' Stoever.
26"x26"x8' Niles.
26"x26"x6' American.
24"x24"x12' American Tool Works, 2 heads.

PIPE MACHINES.

12" National.
8" Saunders.
8" Curtis & Curtis, (2).
6" Stoever.
6" Curtis & Curtis, (3).
4" Armstrong.
4" Morris & Tasher, (2).
2" Borden.
2" Jarecki.

SECOND-HAND MACHINERY

FOR SALE BY

Strong & Hery Co., - 210 State St., Rochester, N. Y.

New and Used Machine Tools.

In stock for immediate delivery.

NEW MACHINES.

BORING MILL.

34" Rogers, turret head vertical boring and turning machine.

GEAR CUTTER.

40" Flather automatic gear cutter.

GRINDING MACHINES.

No.2 Bath univ.,complete equip."C"
No.1 Bath univ.,complete equip."C"
No. 2 Wilmarth & Morman, surface
Capital internal grinder.
Greenfield, univ. tool and cutter.

SCREW MACHINES.

No. 0 Foster plain head, 9-16" wire feed capacity, (4).
No. 2 Foster plain head, 1 1-16" wire feed capacity.
No. 4 Foster grd. fr. head, 1 9-16" wire feed capacity, power feed to turret, (2)

SHAPERS.

20" Davis, b. g., gear box drive.
24" Milwaukee, back gear, (2).

MILLING MACHINES.

No.0 Rockford plain, arbor and vise.
No. 1 Standard hand, arbor and vise, (2).
No. 12 Garvin plain, arbor and vise.
No. 3 Rockford, arbor and vise.
U. S. plain, Whitney pattern, (3).

DRILL PRESSES.

10" sensitive bench, with chuck, (6).
14" U. S. sensitive, (3).
20" Buffalo. b.g..self fd. aut.stop,(2).
20" Barnes plain, (2).
20" Champion, b. g., self feed, auto stop, (4).
2-spindle No. 32-A Reed sensitive.

BENCH LATHES.

No. 4 Stark, compound slide, 3 speed c. s., 10 c., (2).
No. 5½ Sloan & Chase, 3 speed c. s., 10 c.

LATHES.

13"x6' Flather, p. c. gear.
13"x6' Worcester, p. c. gear.
14"x6' Hamilton, q. c. gear.
16"x8' Flather, q. c. gear.
18"x8' Hamilton, q. c. gear.
18"x8' Wolcott, q. c. gear.
20"x6' Rahn Larmon, q. c. gear.
20"x10' New Haven. p. c. gear.

USED MACHINES.

DRILL PRESSES.

2-spindle No. 2 Avey high speed.
Single spindle Sipp high speed.
20" Excelsior, auto. feed, b. g., (2).
Single spindle Class "K" Henry & Wright, high speed.
23" Snyder, auto. feed, b. g., (2).

MILLING MACHINES.

No. 2 Garvin, univ.,with dividing hd.
No. 2 Garvin, hand miller, Lincoln type.
Carter & Hakes, Lincoln type.
No. 1 Steptoe hand millers, with vise and arbor, (3).

LATHES.

14"x8' Davis, q. c., gear.
16"x6' Greaves-K., q. c., t. a.
18"x8' Davis, q. c., t. a.
20"x12' Greaves-K., q. c., gear.

PLANER.

24"x24"x6' Cincinnati Planer, one head.

PUNCH PRESSES.

No. 67 Stoll geared presses, weight 5900 lbs., like new.
No. 73½ Bliss, with trimming attachment, (2).

MISCELLANEOUS.

Grinder, 6x32 Norton automatic, 2 years old.
Grinder, internal, No. 2½ Bath duplex.
Screw machine, 1" Hartford automatic.
Turret screw machine, No. 10 Bardons & Oliver, 3" capacity.
Shaper, 18" Ohio.

SECOND-HAND MACHINERY

FOR SALE BY

Henry Prentiss & Company, Inc., • Singer Bldg., New York

Formerly

Prentiss Tool & Supply Company,

BORING MACHINES.

No. 1 Beaman & Smith, double hd.
2-spindle Beaman & Smith hor.

DRILLING MACHINES.

24" Henry & Wright b. b., sens.
4-spindle Woodward & Rogers.
4-spindle Barr.
5-spindle Reed.
36" Bickford plain radial.
4' Bickford full universal, (11).
36" Prentice Bros., upright.
No. 37 Natco, 18 spindles.
10 spindle Gardam adjustable.
No. 4 Quint turret.
4½' Dreses plain radial.

GRINDERS.

No. 1 Norton univ., c. and t.
No. 5 Rivett on stand.
12x60 Landis universal.
12x30 Landis universal.
No. 6 Bryant internal.
No 200 Heald, piston ring.
No. 3½ Van Norman radial.
Nos. 1 & 2 Hartford auto. surface.

LATHES.

11"x5' Barnes, compound rest, power cross feed.
15"x8' Hamilton, plain rest, p. c. f., taper attachment.
16"x8' Porter, c. r., p. c. f.
16"x 6' Automatic threading.
18"x 6' Reed, compound rest, power cross feed.
18"x 8' Rahn-Carpenter, compound rest, power cross feed.
18"x8' American, compound rest, quick change, taper attachment.
28"x14' Pond, compound rest.
26"x14' Gleason, compound rest, power cross feed.
36"x14' Pond, compound rest, power cross feed.
38-50"x14' Fifield, compound rest, power cross feed.
20-42"x12' F. & S. gap, motor drive.

MILLING MACHINES.

No. 12 Brown & Sharpe plain.
No. 3½ Garvin plain.
Rivett swivel miller.
No. 2 Garvin hand miller.
No. 15 Garvin plain.
No. 13 Brainerd universal.
Nos. 1 & 2 P. & W. hand.
No. 2 Garvin universal.
No. 3 Reed plain.
No. 2 Milwaukee univ., vert. att.

PLANERS.

24"x24"x8' Sellers.
24"x24"x 6' Wheeler.
26"x26"x 5' Pond.
42"x36"x10' Ohio.

SCREW MACHINES.

2" Cleveland automatic, (20).
20x7 F. & S. universal turret.
15x6 Windsor turret.
20" J. & L., single pulley.
¾" Rivett, wire feed.
¾" Cleveland automatic.
¾" National-Acme, automatic.
1¼" Rivett, plain turret.

MISCELLANEOUS.

Air compressor, 8"x8" American.
Bending machine, 30 ton Watson Stillman.
Cutting-off machine, 6¼" automatic.
Gear cutter, 22" G. & E.
Gear cutter, 26x10 Cincinnati.
Gear hobber, 12x6 G. & E.
Hammer, 675 lb. P. & W.
Keyseater, No. 2 Mitts & Merrill.
Shaper, 14" Steptoe.
Shaper, 24" Hendey.
Shaper, 30" Cincinnati.

SECOND-HAND MACHINERY

FOR SALE BY

The Motch & Merryweather Machinery Company,
711 Lakeside Av., N. W. - - Cleveland, Ohio
Branches: Detroit, Cincinnati, Pittsburgh.

AUTOMATICS.

2" Cleveland.

BOLT CUTTERS.

2" National.

BORING MILLS.

36" Niles standard, vertical.

BROACHING MACHINES.

No. 1 J. N. Lapointe.
No. 3 Lapointe Machine Tool Co.

DRILLING MACHINES.

No. 315 Baker.
4' Prentice radial.
28" Sibley, sliding head.
10' Burke sensitive.
4-spindle 24" Hoefer gang.

GRINDERS.

10"x36" Norton.
No. 1 Cincinnati cutter.
No. 12 Gardner, duplex disc.
24" double wet tool.
20x1½ single wet tool.
No. 210 Heald.
No. 14 Brown & Sharpe.
12x32 Landis.

HAMMERS.

35 lb. Williams & White, power tire welding.
1200 lb. Bell, steam.
800 lb. Massillon, steam.

KEYSEATERS.

No. 0 Mitts & Merrill.
18"x1½" Norton.
No. 1 Baker.

LATHES.

30"x14' Lodge & Shipley.
28"x10' New Haven.
18"x 8' Davis.
18"x 8' Hamilton.
16"x 6' Harrington.

PLANERS.

26"x26"x 6' Gray.
24"x24"x 6' Gray.
36"x36"x14' Sellers, 4 heads.
60"x48"x18' Gray, 3 heads.

PIPE MACHINES.

12" Curtis & Curtis.

SHAPERS.

24" Smith & Mills.
16" Hendey.
16" Gould & Eberhardt.

SLOTTER.

12" Industrial.

SAWS.

7" high duty Paragon.
6" Atkins "Kwick-Kut."

SCREW MACHINES.

4½" Bardons & Oliver, motor driven.
1½" Wood Tilted Turret.
1½" Warner & Swasey.

TURRET LATHES.

24" Gisholt.
22" Libbey.
21" Gisholt.
18" Libbey.
16" Bardons & Oliver.
14" Warner & Swasey.
2" Jones & Lamson.

MISCELLANEOUS.

Flywheel balancing mch., Rockford.
Oil separator, Curtis.
Upsetter, 2½" Ajax.

SECOND-HAND MACHINERY

FOR SALE BY

W. F. Davis Machine Tool Company

32 N. Clinton St., Chicago, 508 Leader News Bldg., Cleveland
402 Singer Bldg., New York, 308 Greenwood Bldg., Cincinnati

PLANERS.

72″x54″x16′ L. W. Pond, two heads on rail.
60″x60″x21′ Pond, two heads on rail, one side head on independent floor col.
48″x48″x24′ Betts, two heads on cross rail.
44″x44″x12′ Powell, two heads on cross rail.
42″x42″x13′ Kimball & Austin, with one head on cross rail.
42″x42″x12′ L. W. Pond, two heads on cross rail.
42″x42″x 8′ Gleason, one head on cross rail.
42″x42″x10′ L. W. Pond, one head on cross rail.
36″x36″x16′ Putnam, two heads on cross rail.
36″x36″x14′ American, two heads on cross rail.
36″x36″x10′ Cleveland, openside, one head on cross rail, motor driven.
30″x30″x12′ Hamilton, two heads on cross rail.
30″x30″x 8′ Cleveland, openside, with two heads on cross rail.
30″x30″x 6′ Whitcomb, one head on cross rail, belt or motor driven.
26″x26″x 8′ Gray, with one head on cross rail.
24″x24″x 6′ Gray, one head on cross rail.

VERTICAL BORING & TURNING MILLS.

24′ Special vertical turning machine suitable for turning fly wheels, etc., from 12′ to 24′ diameter up to 42″ face.
10-16′ Pond extension, two swivel heads, 96″ table, motor driven.
10′ Betts, two swivel heads, belt driven.
8′ Betts, with stationary rail, 3 swivel hds., takes 25″ under rail, extra heavy.
36″ Baush & Harris, with two swivel heads.
34″ Colburn, with one swivel turret head.
34″ Rogers, with one swivel turret head.
84″ Niles, two swivel heads and central boring head, arranged for variable speed motor drive, geared feed.

HORIZONTAL BORING MACHINES.

158″ horizontal floor boring machine, 16′ between centers, bed plate 20′x14′; hole in spindle 7¾″; vertical travel to head but no cross travel.
No. 4 Newton, two spindle boring & drilling machine, main table 42″x72″.

HORIZONTAL BORING, DRILLING & MILLING MACHINES.

Lucas No. 1, with 2¾″ bar.
Cleveland No. 1, with 2¾″ bar.
Newark, with 2¾″ bar.
Binsse No. 3½. 3″ bar, 6′ travel.

CYLINDER BORING MACHINES.

No. 2 Barrett, with 5″ bar.

KNEE TYPE MILLING MACHINES.

No. 1½ B. & S. plain, (2).
No. 2 Cincinnati plain.
No. 2 Kempsmith plain.
No. 2B B. & S. plain.
No. 3 LeBlond plain.
No. 3 Kempsmith plain.
No. 3 Cincinnati pl., sgl. pulley dr.
No. 4 Cincinnati plain.
No. 24 Osterlein universal.
No. 1½ Cincinnati universal.
No. 2 B. & S. universal.
No. 2 B. & S. univ., sgl. pulley dr.
No. 3 LeBlond universal.
No. 3 B. & S. universal.

PLANER TYPE MILLING MACHINES.

30″x30″x16′ Newton slab.
16″x16″x 4′ Newton slab.
20″x20″x20′ Ingersol slab.
30″x30″x 6′ openside B. & S. slab.
36″x36″x 8′ Ingersol with one vertical spindle.

GEAR CUTTING MACHINES.

36″ Fellows gear shaper.
No. 1½ Adams gear hobber.
No. 2 B. & S. 18″ auto. g. c.
6″ Bilgrim bevel gr. generators, (2).
12″ Gleason single tool bevel gear planer.
No. 12 B. & S. 12″ auto. gear cutter.
20″ Grant-Lees gear hobber.
24″ Fellows gear shaper.
No. 3 B. & S. 26″ auto. gear cutter.
30″ Flather auto. gear cutter.

TOOL & CUTTER GRINDERS.

No. 1 Cincinnati.
BX Wilmarth & Morman.
No. 190 Wells.
No. 1 Greenfield.
No. 2 Cincinnati.

W. F. Davis Machine Tool Company—Continued.

MANUFACTURING GRINDERS.

12"x24" Modern self-contained with wide wheel.
No. 11 B. & S. 6"x30" plain.
5"x48" P. & W. plain.
No. 21 Landis 10x30 plain.
11x36 Landis plain, (2).
12"x42" Cincinnati plain.
12"x48" Modern plain, (2).
14"x72" Queen City plain.
No. 1½ Landis universal.
10"x24" B. & S. universal, (2).
No. 2 Bath universal.
No. 2½ Bath universal.
10"x42" Modern universal.
No. 2 Landis universal.
No. 3 B. & S. universal.
No. 3 Landis universal.
No. 1½ Landis internal.
No. 75 Heald internal.
No. 200 Heald ring & surface.
8" Heald piston ring.
No. 210 Heald ring grinders, (2).
No. 6 Bryant chucking, (2).
No' 10A Bryant chucking.
No. 2 B. & S. surface.

FOR SALE BY

B. C. Allen Machinery Co., 1000 W. Randolph St., Chicago

Drill, 6-spindle sensitive,	$ 50.	Lathe, 15"x5' brass spinning,	$ 85.
Drill, 20", b. g., p. f., chuck,	85.	Lathe, 18"x8' Bradford,	525.
Drill, post, No. 16 Canedy-O.,	40.	Lathe, 24"x12' Lodge Davis,	625.
Emery grinder, No. 3 complete.	18.	Miller, No. 2 plain b. g.,	350.
Gap lathe, 14-20"x6',	160.	Motor, 1 h.p., starter & switch,	25.
Hack saw, Hoefer, power,	12.	Screw machine, ⅝",	100.
Lathe, foot, 10"x5' Star,	200.	Shaper, crank, 20" G. & E., b.g.,	550.
Lathe, foot, 11"x5' Johnson,	150.	Shaper, geared, 24" Hendey,	225.
Lathe, 11"x5, Reed,	150.	Shear, circle, Niagara,	20.
Lathe, 14"x5' Fox Monitor,	135.	Shear, squaring, 30" (2), each,	35.

FOR SALE BY

The H. A. Smith Machinery Co., 384 W. Fayette St., Syracuse, N.Y.

NEW MACHINERY

LATHES.

12"x6' Seneca Falls t. r., style H, (6).
18"x8' Cisco d.b.g., quick change, (2).
13"x6' Seneca Falls "Star" style 65-E, (6).

SHAPERS.

12" Smith & Mills, singe geared.
16" Springfield heavy duty, b. g.

GRINDERS.

Wilmarth & Morman No. 1 univ., auto. feed.
No. 3 Wilmarth & Morman surface.

DRILLING MACHINES.

2-spindle Sipp ball bearing.
4-spindle Sipp ball bearing, (2).

SECOND-HAND MACHINERY

LATHES.

14"x6' Reed, c. r., taper att.
14"x6' Reed, c. r., turret on bed.
14"x6' American, t. a., turret on bed.
13"x5' Barnes, compound rest.

MILLING MACHINES.

No. 2 Garvin hand miller.
No. 0 Pratt & Whitney hand miller.

SCREW MACHINES.

14" W. & S. turret lathes with air chuck, (2).
14" W. & S. scr. mch., pan and pump.
Jones & Lamson 2½x24, bar outfit.
Jones & Lamson double spindle 2½x24, regular chucking outfit.

PROFILERS.

Garvin No. 4 single spindle, power feed to table, (2).

GRINDERS.

Heavy polishing mchs., 1½" sp., (2).
18" Disc grinder and setting-up press.

DRILL PRESSES.

4-spindle Gorton, ½" capacity.
6-spindle Barr, ½" capacity.

MISCELLANEOUS.

Blacksmith hammer, 50 lb. Kane & Roach.
Sprue cutter, Waterbury- Farrell.

SECOND-HAND MACHINERY

FOR SALE BY

Stocker-Rumely-Wachs Co., 117-121 N. Jefferson St., Chicago

Immediate Delivery.

DRILLING MACHINES.

No. 0 Bickford plain radial.
30" Valley City radial.
5' Western radial.
1-spindle Avey, b. b., (new).
4-spindle Avey, b. b.
12-spindle P. & W. multiple.
12-spindle No. 30-C Baush.
4-spindle Allen, new.

GEAR CUTTERS.

Reynolds hobber.
No. 11 B. & S. automatic.
30"x9" Gould & Eberhardt automatic for spur and bevel.
24"x7" Gould & Eberhardt for spur.
36" Brainard, for spur and bevel.
36" Walcott, for spur.

GRINDERS.

No. 23 B. & S. gear cutter grinder.
Yankee drill grinder.
6"x30" Modern, plain, (new).
No. 10 B. & S. plain, (3).
14"x20" B. & S., plain.
14"x72" Queen City.
Garvin hole grinder.
Gisholt tool grinder.
No. 5 Diamond, water tool.
No. 4 Springfield, car wheel.

LATHES.

13"x 5' P. & W., c. r., taper.
14"x 6' Davis, p. r.
14"x 6' Fairbanks, c. r., taper.
16"x 6' Prentice, c. r.
16"x 6' Bradford, c. r., q. c. g.
18"x 8' American, c. r., q. c. g.
16"x10' Bradford, p. r.
18"x 8' L. & S., pat. head, c.r., taper.
18"x10' Fitchburg, c. r.
18"x12' Barker, c. r.
20"x14' Blaisdell, c. r.
21"x12' New Haven, c. r.
21"x12' Bradford, c. r., taper.
24"x13' New Haven, c. r.
36"x20' American, t. b. g.
36"x20' American, t. b. g.
60"x20' New Haven, t. b. g.
72"x20' with back end of spindle arranged for pit lathe work.

MILLING MACHINES.

No. 3 Rockford hand miller.
No. 2½ LeBlond, universal.
No. 1½ Chicago, plain.
No. 2 LeBlond, plain.
30"x30"x6' Newton, slab.

PLANERS.

24"x24"x 6' Cincinnati, 1 head.
32"x32"x 8' New Haven, 1 head.
36"x36"x12' Powell, single head, arranged for two.
36"x36"x16' Sellers, 1 head.
36"x36"x12' Chandler, two heads.
40"x38"x14' Putnam, 1 head.

SCREW MACHINES.

1" B. & S. plain.
16" P. & W. plain.
No. 1 Foster, plain head.
No. 2 Foster, plain head.
No. 3 Foster, geared head.
No. 4 Pearson, geared head.
No. 3 Bardons & Oliver, plain head.
No. 12½ Garvin, friction head.
No. 52 National Acme 4-spdl. auto.
No. 2-G B. & S. automatic.
3½" Gridley automatics, (5).
4½" Gridley automatics, (4).
2" Cleveland automatic.
1" Cleveland automatic.
2½" Cleveland automatics, (2).
¾" Cleveland automatics (2).

TURRET LATHES.

16" Lodge & Shipley.
25" Niles.
No. 2 Warner & Swasey, hollow hexagon.
2"x24" Jones & Lamson.
3"x36" Jones & Lamson, bar equip.
3"x36" Jones & Lamson, chucking equipment.
21" Gisholt, with taper.
24" Steinle.

MISCELLANEOUS.

Chain hoist, 3-ton Yale duplex.
Chain hoist, 3-ton Yale triplex.
Cold saw, 4" Nutter & Barnes.
Crane, portable, No. C Franklin.
Flywheel press, No. 203-E Toledo, double crank.
Keyseater, No. 2 Mitts & Merrill.
Keyseater, No. 3 Mitts & Merrill.
Oil separator, No. 2 National.
Punch and shear, single end, Weis & Roos, cap. ¾"x1".
Punch and shear, double end, No. 4 Bremer, cap. ¾"x1¼".

SECOND-HAND MACHINERY

FOR SALE BY

Machinery Department—The W. M. Pattison Supply Company
Cleveland Office: 777 Rockwell Ave.
Detroit Branch: 1534 Dime Bank Building

LATHES.

14"x 6' Hamilton, comp. rest.
14"x 6' Porter, comp. rest.
14"x 6' Sebastian, comp. rest.
14"x 8' Monarch, comp. rest.
14"x 8' Sebastian, comp. rest.
16"x 6' Pratt & Whit., elev. rest, t. a.
16"x 8' Monarch, comp. rest.
16"x 8' Reed, elevating rest, t. a.
16"x 8' Monarch, comp. rest.
17"x 6' LeBlond heavy duty manufacturing, comp. rest.
16"x 8' National, comp. rest.
17"x14' LeBlond heavy duty manufacturing, plain rest.
18"x 8' Hendey, comp. rest.
18"x 8' Rahn-Mayer, comp. rest.
18"x 8' Greaves & Klusman, c. r.
18"x 9' Chard, comp. rest.
18"x10' Rahn-Mayer, comp. rest.
20"x10' Reed, comp. rest.
27"x14' Pratt & Whitney, swivel rest, t. a.

SHAPERS.

16" American crank shaper.
16" Walcott crank shaper.
16" Ohio Mch. Tool Co., b. g. crank.
18" Ohio Machine Tool Co., b. g. crank.
20" Hendey pillar shaper.

PLANERS.

22"x22"x 6' Pratt & Whitney.
24"x24"x 4' G. A. Gray.
26"x26"x 8' G. A. Gray.
30"x30"x 8' American.

TURRET MACHINERY.

No. 1, 13-16" capacity Foster screw machine with auto. chuck, wire feed.
No. 1, 15" Warner & Swasey universal turret lathe, b. g.
No. 3, 15" Bardons & Oliver friction geared head turret lathe, automatic chuck and chasing attachment.
21x8 Lodge & Davis chucking lathe.
7x14 Potter & Johnston turret lathe.

AUTOMATICS.

⅝" Cleveland automatic.
⅝"-¾" Cleveland automatic.
4½" Cleveland automatics, (3).

DRILLING MACHINES.

16" Sipp high speed b. b. drill.
16" Kern high speed b. b. drill, arranged for tapping.
20" Barnes drill, square base, lever feed.
2-⅜" Barnes drill, with back gear, wheel and lever feed.
28" Superior drill, with back gear, power feed and automatic stop.
30" Snyder drill, back geared, power feed.
8-spindle Western multiple drill, 18" circular head.
2½' Gang radial drill.

MILLING MACHINES.

No. 1½ Rockford universal.
No. 3½ Fox hand, pwr. fd. to table.
No. 21 Garvin plain geared.
No. 0 LeBlond plain.
No. 2 Becker vertical, rotary table.
No. 5 Becker vertical, rotary table.
Blake & Johnson, vertical.

GRINDERS.

No. 11, 6x30 Brown & Sharpe plain grinder.
No. 12, 8x32 Modern plain grinder.
No. 1, 8x20 Fraser universal convertible grinder.
No. 3, 14x42 Modern universal grinder.
Heald piston ring grinders, (2).
Greenfield universal cutter and tool grinder.
No. 1 Norton universal cutter and tool grinder.
12x12x24 Diamond Machine Co's. automatic surface grinder.
24x24x48 Springfield automatic planer type surface grinder.
Pratt & Whitney vertical surface grinder.

MISCELLANEOUS.

Hammer, steam, 350 lb. Massillon.
Hammer, cushion helve, 40 lb. Bradley.
Cold saw, 6" cap. No. 3 Burr.
Cold saw, 8" cap. No. 17 Higley.
Gages, No. 1 Johansson, one set.
Pipe threading machine, 3" B. & K.
Keyseaters, No. 0 Little Giant, (2).
Press, No. 3 Adriance, o. b. i.
Punch press, No. 1 Stiles, power.
Punch press, No. 3½ Bliss, power.
Saw, power, 6x6 No. 1 Racine.
Saw, power, 12x12 No. 7A Racine.
Squaring shear, 36" Ohl, power.

SECOND-HAND MACHINERY

FOR SALE BY

Enterprise Machinery Co., 32-34 S. Clinton St., Chicago, Ill.

Brake, 6', pwr., D. & K. 10 g.	$ 260.	Scr. mchs, hand, new, 1½"-1¾"-1¼"-1".	
Buffer, 1½", and countershaft	25.	Scr. mch., auto., Hartford ¼"-⅝	250.
Cold saw, Atlantic, 24" auto.gr.	275.	Screw press, b. g., pwr., 12" str.	240.
Drill, multi-sp., 1½"	900.	Set screw machine	40.
Drill, b. g., 28"	115.	Shaper, trav. head, 13"x36"	200.
Hammer, steam, 2-ton Morg.	2500.	Shaper, 24" L. & D., vise	300.
Hammer, helve, 25" Bradley	70.	Speed lathe	35.
Lathe, 16"x5', ½" H. S.	110.	Sq. shear, 40", power	75.
Miller, No. 2 Cin. univ., vise	900.	Wire straightener, hand	55.
Planer, 42"x42"x15', 2 heads	1200.	500 other tools.	

FOR SALE BY

Power Mchy. Exchange, Inc., 1 Montgomery St., Jersey City, N. J.

ELECTRICAL MACHINERY.

K.W.	Make	Voltage	Drive	Price
140	G. E.	250	Ridgway engine	$1500
130	C. W.	250	belted	1000
100	G. E.	250	belted	800
100	Wghse.	3-wire	Erie engine	1675
75	G. E.	2-wire	Buckeye Engine	1250
75	G. E.	250	Ames Engine	1000
60	G. E.	250	belted	475
30	G. E.	250	Erie Engine	625

Also 125 volt units: 150, 100, 65, 50 k. w. and smaller.

FOR SALE BY

The Randle Machinery Co., 1739 Powers St., Cincinnati, Ohio

ENGINE LATHES.

All in stock.

14"x 6' Flather, hollow spindle, 3½' between centers.
16"x 6' Flather, hollow spindle, 3½' between centers.
15"x 4'9" Sebastian, hollow spindle, 28" between centers.
16"x 6' Reed, hollow spindle, 3½' between centers.
16"x 6' Lodge & Shipley qck. chg. gear, hollow spindle 3½' between centers.
16"x 8' Gray, hollow spindle, 5' between centers.
21"x10½' Imperial, hollow spindle, takes 7' between centers.
24"x 9' Pratt & Whitney, hollow spindle, 4½' between centers.
27"x10' Lodge & Shipley q. c. g., cabinet legs, 5'5" between centers.

We also have in stock engines, boilers, motors, generators, and power plant machinery of all sizes and kinds. Send us your requirements.

FOR SALE BY

Neidow & Payson Co., 9 So. Clinton St., Chicago, Ill.

Automatics, ⅝" to 2".
Bolt cutters, various sizes.
Boring and turning mills, 41" to 100".
Drills, multiple spdl. and sen. itive.
Grinders, pl., univ. and cutter
Grinder, P. & W. vertical.
Grinder, cylinder, No. 60 Hea'é, new.
Hammers, steam, 400 to 1500 lbs.
Lathes, 9" to 90" swing.
Lathes, 2" and 3" J. & L.
Miller, No. 2 Cincinnati.
Planers, 24" to 72" wide.
Press, screw, power, No. 2 American Can.
Shear, gate, 6' Cincinnati.

Side Milling Cutters, inserted high Speed Steel Cutters. These Cutters have been used, but are in good condition. Cutters similar to No. 307 P. & W. catalogue, page 108:—

Diam.	Face.	Hole.
4 — 5 "	1¼"	1⅛"
1 — 5¾"	1 "	1 "
8 — 6 "	1 "	1¼"

End Milling Cutters, inserted High Speed Steel Cutters. Similar to cutter shown on Brown & Sharpe catalogue, page No. 274:—

Diam.	Face.	Hole.
4 — 8"	1½"	4 "
4 — 12"	3 "	2¼"

SECOND-HAND MACHINERY

FOR SALE BY

A. D. White Machinery Co., - 108-114 N. Jefferson St., Chicago.

NEW MACHINES.

Drill presses, 20" Lindgren, all geared.
Drills, sensitive, 2 and 4-spindle style "A" Barr.
Engine lathe, 14"x6' Carroll-Jamieson.
Engine lathes, 16"x6' Canedy-Otto.
Engine lathes, 18"x10' Mueller.
Grinders, drill, LaSalle and Eames.
Grinder, Greenfield, cutter and reamer.
Grinders, surface, La Salle, (2).
Milling machines, No. 1½ Valley City universal, (2).
Shapers, 16", 20" and 24" Kelly, back geared.
Shapers, 17" and 21" Averbeck.

SECOND-HAND MACHINES.

SCREW MACHINES.

½" LaVigne.
7-16" Cleveland, friction feed.
⅝" Cleveland, friction feed.
⅝-¾" Cleveland, jigger feed.
⅝-¾" Cleveland, friction feed.
¾" Hartford, (3).
1" Cleveland, friction jigger feed.
1½" LaVigne, (2).
2" Hartford.
2½" Hartford.
⅝" Cleveland, semi-automatic.
No. 2 Hercules, hand, new.

DRILL PRESSES.

3' arm American plain radial.
28" Bickford, sliding head.
30" Kerkhoff, sliding head.
32" Bickford, sliding head.
2-spdl. Rockford.
3-spdl. American.
8 spdl. Valley City mult., No. 1 taper.
12 spdl. Baush multiple, No. 2 taper.

ENGINE LATHES.

14"x 6' Monarch.
16"x12' Beaman & Smith.
24"x10' Putnam.
28"x10' Fifield.
28"x25' Putnam.
30"x14' Blaisdell.

GRINDING MACHINES.

18" Ransom, disc.
Yankee Style "B", drill.
1½" Norton, floor, (2).
1½" Bridgeport.
2" No. 7 Sterling, floor.
2" Springfield, double wheel, floor.
Springfield, dbl. wheel, water.
No. 2 Leland & F. water.

PUNCH PRESSES.

No. 33 Crosby, open back.
No. 4 McDonald, open back.
No. 4 Max Ams, o. b. i.
No. 29 Bliss, gang, dbl. action.
No. 100 Crosby gang, 30" bet. uprights.
No. 36 Consolidated, arch, 7" stroke.

MISCELLANEOUS.

Bolt cutter, 1½" Acme, sgl. hd.
Centering mch., 4" Whiton, 2-spdl.
Die filing machine, Simplex.
Hammers, 40 and 60 lb. Bradley.
Hammer, 500 lb. Sandage, lift.
Keyseater, 36" Morton portable.
Miller, plain, No. 4 LeBlond.
Miller, sprocket, No. 2 Garvin.
Miller, slab, Eynon-Ingersoll, 22"x5'.
Oil gas generator, No. 3 American.
Planer 35"x35"x12' Niles, 2 heads.
Riveter, ⅝" Shuster.
Saw, cold, Bryant, 19¾" dia. saw.
Saw, cold, No. 5½ Nutter-Barnes.
Saw sharpeners, Nutter-Barnes, (2).
Saw, band, Williamson, tilting.
Shaper, 16" Smith & Mills, geared.
Shear, slitting, No. 380 Toledo, 16 ga.

SECOND-HAND MACHINERY

FOR SALE BY

Joseph Beal & Co., - 453-457 Atlantic Ave., Boston, Mass.

LATHES.

28 Davis 18"x8' double back geared screw cutting engine lathes, used about six months, with standard equipment. Low price for immediate delivery.

FOR SALE BY

Western Mchy. Co., —C. H. Norton— 12 W. 3rd St., Cincinnati, O.

PLANERS.

30"x30"x 7' Whitcomb, 1 head.
30"x30"x 8' old style, 1 head.

LATHES.

60"x22' old style.
52"x22' Niles.
26"x14' Niles, heavy.
25-46"x22' McCabe double spindle.
24" Davis chucking lathe.
20"x10' Pratt & Whitney.
19"x 6' Davis & Egan, turret, 2½" hole.
17"x 6' Shepard.
16"x 6' Bradford.
12"x 5' Sterling.
2" P. & W. turret, wire feed.

SHAPERS.

20" Cincinnati, crank.
16" Smith & Mills.
14" Steptoe, crank.

MISCELLANEOUS.

Arch press, No. 51 Toledo.
Blower, No. 4 Root, 12" outlet, and engine.
Boring mill, vert., 84" Sellers, one head, old style.
Buffing lathe, 220 v., Barriet.
Cornice brake, steel, 8' Dries & Krump.
Elect. motor, 10 h.p.220 v.,Northern.
Fan, 90" Sturtevant, engine driven.
Fan, double, 60" Sturtevant.
Gas engine, 125 h.p. Buckeye tandem compound, fine condition.
Gas engine, 6 h. p. Cook.
Hammer, drop, 300 lb. Bliss.
Pipe machine, 8" Bignall & Keeler.
Pulley machine, 60" Niles.
Radial drill, 4' Niles.

FOR SALE BY

E. L. Easley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

DRILL PRESSES.

No. ¾ Avey high speed ball bearing, drills on column, fine shape (6).
No. 1 Baker Bros. high speed drill.
1 spindle H. & W. high-speed.
4' Bement-Miles universal radial.

GRINDERS.

No. 3 Garvin cutter and surface gr.
7"x62" No. 16 B. & S. plain grinder.
10"x50" Norton plain.
9"x20" No. 2 Bath univ. grinder.
No. 6 Heald 8" ring grinder with magnetic chuck.
No. 190 Wells cutter and reamer.

LATHES.

30" Niles double head axle lathe.
30"x14' James.
16"x8' Pratt & W., taper att.
19½"x10' Fitchburg.
14"x 6' Lodge & Shipley, q. c. g.
14"x6' Porter.
14"x6' Hendey, q. c. g.
9"x 4' Star.

PRESSES.

No. 2 American Can, o. b. i., (2).
No. 4 Ferracute, o. b. i.
No. 4 Rockford, o. b. i.
No. 4 R. & K., o. b. i.
No. 37 Niagara, solid back, new.
No. 2 Niagara o. b. i. bench press.
No. 2 Consolidated, o. b. i.

SCREW MACHINES.

6" Cleveland automatics, (2).
1½" Dreses, friction head.
No. 22½ Garvin 1 7-16" cap., fric. hd.

MISCELLANEOUS.

Brake, 7' Ohl, up-and-down pattern.
Filer, No. 2 Cochrane-Bly.
Hydraulic wheel press, 160-t. Sellers.
Planer, 48"x48"x14' Pond, 1 head.
Planer and shaper, open side, 20"x50" Walker, traveling head.
Shaper, 27" Walcott.
Punch & shear, No. 8 Whiting, single end.
Punch & shear, No. G-15 Rock River, single end.
Turret lathe, 24"x24" W. & S.
Valve millers, for brass.

SECOND-HAND MACHINERY

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

20"x6' New Haven, comp. rest.
16"x8' Bullard, rise & fall rest. Head plate boring lathe.
18"x10' Flather, c. r., taper att.
22"x8' Flather, c. r., standard.
18"x8' LeBlond, compound rest.
26"x16' Bridgeford, patent head.
8" Hardinge Bros, precision lathe.
18"x6' Whitcomb Blaisdell, c. r.
18"x8' Whitcomb Blaisdell, c. r, (2).
16"x8' Perkins, p. r.
14"x8' Prentice Bros., c. r., standard.
18"x10' Flather, c. r., t. a., q. c. r.
18"x8' LeBlond, compound rest.
36" raised to 44"x8', c. r.
24" raised to swing 32"x12' bed, LeBlond, compound rest.
12"x5' F. E. Reed. r. & f. r.
16"x8' American, c. r., t. att.
12"x5' W. P. Davis Machine Co.
15"x8' VonWyck.
16"x6' Lodge & Shipley, comp. rest.
16"x5' Cincinnati L. & T. Co., c. r.
18"x8' Schumacher, Boye & E., q. c.

TURRET LATHES.

18" Lodge & Davis, gear feed head, automatic chuck.
14" Lodge & Davis, plain head.
21" Gisholt, belt driven, t. a.
No. 1 Warner & S. hol. hex. turret.
24" Davis turret boring & chucking lathe, with vert. forming att.
¾" Pratt & W. turret screw machine.

DRILLING MACHINES.

20" Hoefer, stationary head.
1½" Knight Drilling & Milling, circular milling attachment.
12" Rockford upright.
26" Prentice Bros. standard sl. hd.
22" sliding head, w. & l. feed.
28" sliding head, b. g.
No. 18 Natco multiple spdl., 12"x18' rect. head, 8 spindles.
10-sp. Quint turret drill.
5-sp. Detroit, semi-automatic.
6-sp. Woodward & Rogers, sensitive.
4-sp. Garvin, sensitive.
3-sp. H. G. Barr, sensitive.
60" Alfred Box plain radial.
No. 15½ Foote-Burt vert. 8-sp. mult.
Foote-Burt dbl. spindle vertical.
No. 175-5' arm Cincinnati-Bickford wall type plain radial.
14" Taylor & F. upright sensitive.
3' American hi-spd. sensitive radial.
2' Gang plain radial, universal table, come drive, tapping att.
Foote-Burt 4-spindle vert. cylinder boring, new.
Beaman & Smith double spindle horizontal boring, (2).
Barrett horizontal cylinder boring.

SCREW MACHINES.

2" Cleveland full automatic.
No. 1 Bardons & Oliver pl. hd. tur.
¾" P. & W. hand screw machine.
No. 00 Brown & Sharpe automatic.
1" Hartford full automatic.
2" Hartford full automatic.

MILLING MACHINES.

Special horiz. slab miller, 66"x45" movable heads.
LeBlond universal.

GRINDERS.

Norton 10"x50", plain cylinder.
Gisholt tool grinder.
Cincinnati univ. cutter & reamer.
Warner & Swasey cock grinder.
20" Whitney wet grinder.
Type "DE" Hisey-Wolf internal.
Greenfield univ. cutter & reamer.
Wells bench cutter and reamer.

HAMMERS.

Coffman, post,power dr., 25 lbs., c. s.
100 lb. Cady, belt drop., c. s.
25 lb. Bradley, upright helve.
No. 2-A high spd. riveting, c. s., (3).
400 lb.-4 poppet Etna Machine. Co. rope drop hammer.

RIVETERS.

¾" Shuster, elastic rotary blow.
No. 81-A Grant bench type rivet spinning machine.
1/16" Adt, elastic rotary blow.
11½" throat Giant rivet spinning machine.

GEAR CUTTERS.

Dwight Slate auto. pinion cutter.
Schuchardt & S. Le Jeune auto. gear tooth rounding.
No. 4. 12" Lees Bradner auto.gr.hob.
Brown & Sharpe spur gear testing machine.

MISCELLANEOUS.

Bolt cutter, 1½" Landis, single.
Bolt cutters, 1" Wells, h. & p., solid sp., and 1½" Wells, solid die, sgl.
Flywheel presses, Waterbury, o.b.pl.
Keyseater, Morton, draw stroke.
Keyseater, Mitts & M. sq. frame.
Keyseater, Mitts & M. No. 3 Giant.
Keyseater and slotter, No. 0. Baker.
Planer. 24"x24"x6' Gray, 1 head
Thread miller, 6"x18" Cleveland.

SECOND-HAND MACHINERY

FOR SALE BY

Machine Tool & Supply Co., - - Davenport, Iowa.

Cold saw, 12", rotary blade.
Engine lathe, 15"x8' South Bend.
Engine lathe, 16"x8' Greaves & Klusman.
Engine lathe, 18"x8' Rockford, complete.
Engine lathe, 20"x10' Flather, taper attachment.
Motor, 3 h. p., a. c., 2 phase, 60 cycle, 440 volts.
Motor, 5 h. p., a. c., 2 phase, 60 cycle, 440 volts.
Planer, 22"x22"x6' Whitcomb & Blaisdell, like new.
Punch press No. 2, open back inclinable.
Several Woodworking Machines and other tools.

FOR SALE BY

Brownell Machinery Co., - 11-13 Eddy St., Providence, R. I.

Boring mill, 36" Baush & Harris vertical.
Cutting-off machine, 3" H. & R.
Cutting-off machine, 4½" Williams.
Drill, 21" Prentice, sliding head.
Flat turret lathes, 3"x36" J. & L., for chucking only.
Flat turret lathe, 3½x36 Acme for chucking only, (4).
Gear generator, 12" single tool, (2).
Grinder, 5"x48" P. & W. plain.
Lathe, 16"x7' Oliver, new.
Lathes, 18"x10' Rahn-L., new, (2).
Lathe, 18"x12' Rahn-Larmon, new.
Lathe, 18"x10' Bradford.
Lathe, 22"x10' Nicholson & W.
Miller, No. 4-B Becker vert., new.
Planer, 24"x24"x6' Whitcomb, 1 hd.
Planer, 22"x22"x5' Pond, 1 head.
Screw machines, No. 2 Southworth, new, (2).
Tur.chucking lathe, 20"x6' Florence.
Turret lathes, 21" Gisholt.
Turret lathe, 20" Bullard projectile.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,
210-212 Washington Ave., St. Louis, Mo.

LATHES.

13"x 6' Barnes.
14"x 6' Porter.
15"x 5' Prentice.
17"x 6' Johnson.
18"x 8' Rahn & Larmon.
20"x10' Mueller, with taper att.
24"x12' Forsaith.
48"x30' Gleason, triple geared.

DRILLING MACHINES.

18" Sibley.
20" Sibley.
22½" Barnes.
24" Bickford.
28" Bickford.

SHAPERS AND PLANERS.

16" Steptoe-McFarland.
24"x24"x 6' Lodge & Davis.
36"x30"x 8' Powell.
60"x72"x16' Fitchburg.

AIR COMPRESSORS.

6"x6" belted.
8"x8" belted.
12"x12"x12" steam driven.

HAMMERS.

25 lb. Bradley.
40 lb. Bradley.
50 lb. Little Giant.
130 lb. Justice.
600 lb. rope drop.
1100 lb. steam.

MOTORS AND GENERATORS.

50 h. p., 220 volt, d. c.
10 h. p., 500 volt, d. c.
15 h. p., 500 volt, d. c.
55 h. p., 500 volt, d. c.
5 h. p., 3 ph., 60 cy. 220 volt, a. c.
10 k. w. 115 volt, d. c. generator.

MISCELLANEOUS.

Arbor press, 30 ton.
Bending rolls, 12½ and 9½", 8' long.
Bolt cutter, 1½" capacity.
Cold saw, No. 2 Espen-Lucas, with grinder.
Grinder, No. 35 plowshare.
Grinder, safety ring wheel.
Miller, Pratt & Whitney, hand.
Miller, No. 3 Rockford, hand.
Punch and shear, No. 14½ W.-W.

SECOND-HAND MACHINERY

FOR SALE BY

Brown-McDonald Machinery Co., 2323 N. 9th St., St. Louis, Mo.

LATHES.

13"x 6' South Bend, h. s., compound rest, new	$ 267.50
15"x 8' South Bend, h. s., compound rest, new	360.00
16"x 8' South Bend, h. s., compound rest, new	430.00
18"x 10' South Bend, h. s., compound rest, new	570.00
17"x 8' Sidney, double back geared, quick change gear, hollow spdl., compound rest, new	980.00
19"x 10' Sidney, double back gear, quick change gear, hollow spdl. and compound rest, new	1090.00
17"x 8' Fifield, hollow spindle, plain rest	275.00
18"x 8' Barker, h. s., compound rest	375.00
12" Warner & Swasey speed lathe and chuck	50.00

DRILLING MACHINES.

No. 1 Burke, bench, sensitive, ½" cap., with chuck; new (3). each	$ 16.50
No. 28 Western Chief, bench, sensitive, ½" cap.; new (2), each	22.50
20" Champion, sq. b., lever feed; new (3), each	92.00
20" Champion, sq. b., wheel and lever feed; new (3), each	100.00
20" Champion, sq. b., back gear, power feed; new (3), each	130.00
28" Aurora, sliding head, back geared and p. g. f.; new	300.00
24" Bickford, sliding head, wheel and lever feed	85.00

PUNCHES AND SHEARS.

No. 6 double end, cap. ½" in ⅝"-6" throat	$ 150.00
Alligator type, cap. ¾" in ⅞"	125.00

SHEARS.

No. 11-A Badger, alligator, cap. ½x3	$ 65.00
No. 15-A Niagara ring and circle shear, head only	75.00

SAWS.

Bryant No. 10, Q. & C. cold saw, 20" saw	$ 150.00
Ryerson, friction, motor driven, 44" saws, 220 v., d. c.	650.00
No. 2 Atkins Kwick-Kut hack saw	25.00
No. 1 Hoefer hack saw	15.00

BRAKES.

4' Dreis & Krump, cap. 16 ga.; new	$ 70.00
8' Dreis & Krump, cap. 18 ga.; new	117.50
6' Robinson, cap. 20 ga.; (2), each	100.00
8' Robinson, heavy type, power	300.00

COMPRESSORS.

6x6x6 Laidlaw-Dunn-Gordon, steam; cap. 30 cu. ft.	$ 125.00
10x10 Star, vertical, with engine, double acting; cap. 120 cu. ft.	450.00

MISCELLANEOUS.

Air hoist and trolley, 12x48, vertical	$ 60.00
Blower, No. 9 Sturtevant	90.00
Blower, pressure, No. 7 Sturtevant on base	75.00
Blower, volume, No. 9-B Buffalo	75.00
Bolt cutter, Acme 1½" double head	300.00
Buffing lathe, No. 5 Blount, and c. s., new	30.00
Floor crane, No. 4 Hercules	45.00
Grindstone frame, iron, for 36x6 stone	25.00
Hammer, helve, size B Rochester	100.00
Hammer, helve, 60 lb. Knowlton	250.00
Milling machine, No. 6 Whitney, hand	175.00
Milling machine, No. 15 Garvin, vertical spindle	750.00
Screw machine, 1x8" Pierce, plain head turret, new	510.00
Tire setter and pump, 60" Hercules	600.00

FOR SALE BY

J. L. Osgood, - - - 45 Pearl St., Buffalo, N. Y.

Cutting-off machine, 2" H. & R.
Disc grinder & press, No.6 Gardner.
Drill, 14" Reed, and chuck.
Drill, 20" Snyder, p. f. and a. s.
Lathe, 18"x6' Hamilton, c. r., chuck fitted.
Lathe, 18"x12' Greaves & K., c. r., chuck fitted.
Lathe, chucking, 24" Davis.
Piston & ring mch., Gridley, motor.
Surfacing machine, emery belt, 14' Peerless.
Spur gear testing mch., Gleason.
Turret lathe, No. 5 W. & S. friction head, (2).

FOR SALE BY

G. L. Bennett Machinery Co., Inc., 30 Church St., New York City

Bolt cutter, 1½" Landis.
Bolt cutters, 1½ and 3" Acme.
Bolt header, ⅞" Pawtucket, for hex. and square heads.
Boring machine, 84" horizontal, 4" bar, 72" feed.
Engine lathe, 18"x10' Flather, quick change gear.
Engine lathe, 48"x10' New Haven.
Fox Monitor lathe, 16" American.
Lathes, Putnam, 36"x18' and 24', new, (10).
Locomotive driving wheel lathe, 80" Bement.
Planer, 24"x24"x8' Fitchburg.
Planer, 62"x62"x28' Betts, 2 heads.
Radial drill, 4½' full universal, Univ. R. D. Co.
Radial drill, plain, 5' Pond.
Screw machine, No. 2½ Garvin, geared friction head.
Vertical turret lathe or boring mill, 42".

FOR SALE BY

Niles-Bement-Pond Company, - 111 Broadway, New York
Located at Chicago, Boston and New York

LATHES.

12"x 5' speed lathe.
15"x 7' speed lathe.
16"x 8' VonWyck, quick change.
32"x12' Pond, 220 v., d. c. motor dr.
No. 2 Bement double axle lathe.
No. 3 Putnam double axle lathe.
42" Niles double car wheel lathe.
90" Pond driving wheel lathe.
21"x48" Harrington gap bor. lathe.

TURRET AND SCREW MACHINES.

¾" four-spindle old style Acme automatic screw machine.
½" Style "B" Spencer single turret automatic screw machine.
⅝"x4½" Pratt & Whitney turret lathe, wire feed.

DRILLING MACHINES.

13" friction, sensitive.
32" Aurora, sliding head.
3' Grant combined radial drill and boring machine.
3½' Bement, plain radial.
5' Ridgway radial, 10 h. p., 220 v. d. c. motor.
4' 6" Barr plain radial.
Prentice portable radial.
Four-spindle gang drill.
No. 13 Pratt & Whitney multiple, ½" capacity, 12 spindles.
No. 10 Pratt & Whitney multiple, 1½" capacity, 10 spindles.

MISCELLANEOUS.

Air compressor, 215' Ingersoll-Sargent, 220 v., motor driven duplex.
Boring and drilling machine, horizontal, No. 1 Pawling & H.
Boring mch., horiz., Kelly, 2" spdl.
Boring & t. mill, 60" Niles.
Bor. & t. mill, 84" Niles, arranged for d. c. motors.
Chuck, 36" Pond 4-jaw ind., good.
File sharpener, American.
Punch & shear, double, Huntington, cap. ½" in ⅝", with 18" and 24" throats, arr. for motor drive.
Punch, single, Perkins, cap. ½" in ½", 7" throat.
Saw sharpener, Espen-Lucas.

FOR SALE BY

The Cincinnati Ball Crank Co., Oakley, Cincinnati, Ohio

Butt welder, Toledo type 6.
Cyclodial fan, 20", inlet 10", outlet 10".
Screw machine, single spindle automatic, 2¼" Gridley, motor driven.
Screw machine, multiple spindle automatic, No. 54 National-Acme.
Swaging machine, hot, No. 7 Langelier.

FOR SALE BY

McCoy-Brandt Machinery Company
Office and Warehouse 216-218 Penn Ave., Pittsburgh, Pa.

COMPRESSORS.

10x10" Ingersoll, sgl. cyl. horizontal, belted.
9x9" Hall, sgl.cylinder, horiz.,belted.
12x16" Blake, sgl. cyl., horiz. belted.
10x8x12" Marsh, steam.
20 & 28x14x10x5x24 Ingersol, steam.

HAMMERS.

300 lb. Johnson & Jennings, belted.
60 lb. Bradley, cushion helve.
40 lb. Bradley, cushion helve.
35 lb. Perfect, Magowan & Finnegan.

LATHES.

30"x15' New Haven, p. r., s. s.
24"x14' L. & S., geared hd., c. r.
24"x12' Blaisdell, c. r., h. s.
24"x10' Am., hi-duty, latest type, new.
24"x12' Am., hi-duty, latest type, new.
20"x10' Am., hi-duty, latest type, new.
20"x8' Porter, solid spindle, pl. rest.
18"x8' L.& S., gd. hd., q.c., h.s., c.r., t.a.
13"x6' South Bend, h. s., c. r., new.
12"x5' Dexter, p. r., h. s.

MOTORS AND GENERATORS.

100 h. p. Westg., 220 v., d. c., 680 rev.
30 h. p. Burke, 200 v., d. c., 850 rev.
10 h. p. Westg., 500 v., d. c., 1250 rev.
15 h. p. G. E., 500 v., d. c., 1200 rev.
10 h. p. Sprague, 110 v., d.c., 1025 rev.
50 h. p. C-W., 2 & 3 phase, 60 cycle, 220 v., 870 rev.
5 h. p. Lundell, 110 v., d. c., 1360 rev.
30 h. p. Wagner, 2-60-220, 1140 rev.
10 h.p. Wagner, 2-60-220 1140 & 1720 rev.
7½ h. p. Wagner, 2-60-220, 1140 rev.
5 h. p. Wagner, 2-60-220, 1720 rev.
1 h. p., 2-60-220, 1800 rev.

MOTOR-GENERATOR SETS.

2—150 k. w. Stanley motor generator sets, generators 250 v., d. c., motors 3 phase, 60 cycle, 2200 volts, with exciters, starting motors.

PLANERS AND SHAPERS.

52" planer, widened 74"x24', sgl. hd.
18" Steptoe crank shaper.
16" Barker shapers, new.
24" Barker shapers, new.

PRESSES.

No. 11 Perkins trimming, 4" stroke, 30" bet. hsgs., 14,000 lbs., side shear.
No. 225 Adriance, punch, 2" stroke.
No. 20 McSherry, 2" stroke.
No. 18 Avery, o. b. i., 2" str., (2).

PUNCHES AND SHEARS.

Wais. 16" tht., cap. 1½" thru 1¼".
No. 5B New Doty, hand, cap. ¼½.
Lennox rotary bevel shear, ½" plates.
Butterfly shear, three 8" blades.

MISCELLANEOUS.

Belting, leather 1-12"; rubber 10 & 12"
Blower, No. 7 Roots, 24" outlet.
Boiler, 100 h. p. Erie Economic.
Bolt cutter, 1½" Morgan, motor dr.
Bulldozer, No. 12 Ajax, weight 134,000 lbs.
Chain testing machine, 200,000 lbs.
Drills, 20" Silver, w. & l. fd., new (5).
Drills, bench, 10" Western, new.
Drill, 26" New Haven, sliding hd.
Elect. locomotive, 17 ton, 44" ga.
Exhauster, No. 4 Roots, 10" outlet.
Gas eng., 60 h. p. Bruce-Macbeth, d.c. to 40 k.w. Garwood generator, 125-250 v., d c.
Grinder, double end, 2x14" wheels, 110 v., d. c.
Hack saw, Nos. 2 & 4 Robertson,
Hoisting eng. 6x8, d. c., s. d., boiler.
Hoisting eng. 8x12 d.c., d.d., no boiler.
Keyseater, No. 1 Davis, with cutters.
Pipe machines, 6", belted; 6" Forbes, hand.
Pony, planer, 24x6", auto. feed.
Pump, belted, 4x4 Dean triplex.
Pumps, 3½x10" Dean deep well.
Pump, 12x2½x12" Hall duplex, high pressure.
Rolls, bending, 66", rolls 93" diam.
Saw, cold, 26" Q.M.S., cap. 15" beams.
Saw, metal jig, Thompson No. 2.
Straightening & bending mche., Clev.
Turret lathe, No. 4 Jones & Lamson, ⅞" h. s., hand.
Immediate shipments. Excellent condition.

SECOND-HAND MACHINERY

FOR SALE BY

L. F. Seyfert's Sons, Inc. - 437 N. 3rd St., Philadelphia, Pa.

LATHES.

24"x14' American, q. c. g., (5).
24"x12' Hamilton, (6).
24"x12' Schumacher-Boye.
20"x10' Rahn-Mayer-Carpenter.
20"x8' 8" Davis-Egan.
19"x8' Springfield, q. c. g.
18"x10' Flather, q. c. g.
18"x10' Milwaukee.
18"x 8' Superior.
18"x 8' Milwaukee, (4).
17"x10' Rahn-Mayer-Carpenter.
17"x10' Greaves-Klusman.
17"x 8' Springfield.
16"x 8' 3" Conover-Overkamp.
16"x8½' Hamilton, q. c. g.
14"x 6' LeBlond, q. c. g.
14"x 6' Champion.
14"x 6' Lodge & Shipley, q. c. g.
14"x 6' Hendey.
12"x 6' South Bend.
13"x 5' South Bend.

FOR SALE BY

Clark Machinery Co., 1302 Ontario Ave., Cleveland, O.

Band saws, 26" to 36", (5).
Blower, No. 1 Root, positive pressure.
Blower, No. 8 Buffalo Forge Co.
Centering machine, No. 1 P. & W.
Drill presses, sgl. spdl. sen., (12).
Drill press, sgl. sp. ball bearing, (2).
Drill press, 4-spindle 20" Barnes automatic, all spindles b. g. & p. f.
Drill press, 4-spindle Prentice Bros.
Drill presses, 20", (6).
Grinder, No. 3 Oesterlein universal, new.
Hammer, 25 lb. Bradley, helve.
Lathe, 16"x6' Pratt & Whitney.
Lathe, 26"x14' Fifield.
Lathe, 16"x6' Porter, c. r.
Lathe, 14"x6' Bradford, c. r. & taper.
Lathes, wood turning, (3).
Miller, double end valve.
Miller, vertical, table 22½x54.
Millers, Garvin, Lincoln type.
Millers, No. 7 Becker-Brainard.
Millers, Garvin hand millers, (6).
Plating dynamos, 300, 450 & 1200 amp.
Shaper, 15" Hendey.
Screw machines, No. 4 Wood, (2).

FOR SALE BY

Frank Toomey, Inc., 127-131 N. Third St., Philadelphia, Pa.

LATHES.

26"-48"x14' new dbl. spdl. McCabe, heavy pattern, (2).
28"x13' Harrington.
20"x12' Schumacher-Boye.
20"x10' Bullard, t. a.
20"x10' Blaisdell.
20"x10' Fitchburg.
19"x10' Rahn-Mayer.
17"x8' new National, q. c. g.
17"x 8' new Sidney, d. b. g., q. c. g., swing 21" over shears (4).
17"x8' new Sidney, d. b. g., q. c. g., swing 19" over shears.
16"x8' Greaves & Klusman.
15"x8' Carroll-Jamieson, new.
14"x10' Prentice, t. a.
13"x5½' Carroll-Jamieson, new, (2).

SCREW MACHINES.

2" Cleveland automatic.
24" Gisholt, motor driven.
24" Foster, wire feed, ring.
2"x24" Jones & Lamson.
14"x5' Lodge & Shipley, wire feed.
14"x5' Warner & Swasey, Fox, No. 2 Garvin.
¾" P. & W., hand.

MISCELLANEOUS.

Boring mill, 84" Sellers vertical.
Drills, 20" Rockford, high duty, (3).
Drill, 28" Superior, slid. hd., new.
Drill, 25" Superior, slid. hd., new.
Drill, 20" Superior, new.
Gear cutter, 50"x11" G. & E. auto.
Grinder, universal, No. 3 B. & S.
Grinder, universal, 10"x30" Landis.
Grinder, universal, No. 2 Bath.
Grinder, universal, No. 13 B. & S.
Miller, univ. No. 2 Becker-Brainerd.
Miller, universal, new high power Cincinnati No. 3.
Miller, No. 1½ new American, plain.
Miller, hand, No. 0 Steptoe, new.
Press, d. p., G-55 Ferracute.
Shaper, 24" Flather, back geared.
Shaper, 20" Cincinnati, back geared.
Shaper, 15" Bement, traveling head.
Shaper, 16" Gould & Eberhardt, b.g.
Shaper, 14" new Steptoe.

SECOND-HAND MACHINERY

FOR SALE BY

Victor Shaw Ring Traveler Co., 23 Sabin St., Providence, R. I.

FURNACES AND BLOWER.

American Gas Furnace Co's. No. 1 air tempering furnaces, (2).
No. 6 Boland pressure blower, together with piping, etc., to use with above furnaces.
Brown & Sharpe lead tempering furnace.

FOR SALE BY

Chas. Molitor Machinery Co., 118-124 S. Clinton St., Chicago, Ill.

ENGINE LATHES.

12"x6' Davis, comp. rest.
14"x6' Flather, comp. rest, taper.
16"x8' LeBlond, comp. rest.
20"x8' Eddy, 3-step cone, double back gear, semi q. c.
12"x5' LeBlond, c. r., taper.
18"x36"x9' LeBlond sliding bed gap lathe, 7' closed, 9' extended.
19"x8' Sidney, c. r.
24"x10' LeBlond, c. r.
24"x10" American, geared head, c. r. and taper attachment.

TURRET MACHINERY AND SCREW MACHINES.

No. 0 P. & W., w. f., a. c., 5-16".
No. 1 Pearson, w. f., a. c., ¾".
No. 2 Garvin, w. f., a. c., ⅞".
No. 2½ P. & W., w. f., a. c. 1".
No. 3 P. & W., w. f., a. c. 1⅛".
No. 5 Foster, w. f., a. c., 1¼".
16"x6' Star, back geared.
18"x6' American Fox Monitor.

PUNCH PRESSES.

No. 2 Toledo, o. b. i., 4" str.
No. 22 Bliss b. g. embossing press, 1½" stroke.
Consolidated horiz. press, 8" str.
No. 1 Robinson, s. b., 1½" str.
No. 2-S. Robinson, s. b., 1½" str., back geared.
No. 35 Niagara, solid back, 1½" str.
No. 202-B. Toledo, dbl. crank, b. g., 28" between uprights.
No. 174-B. Consolidated. b. g., 48" between housings, 21"x60" bolster plate.
No. 2 Walsh, o. b. i., 2" str.

MILLING MACHINES.

Wisconsin, hand, vertical att.
Davis, hand bench, collet att.
No. 1½ Knight, vertical.
No. 12 Brown & Sharpe, mfrs.
No. 12 Garvin, p. f.
No. 9 Kempsmith, 24", auto. feed.
8" Betts slotter, 36" swing, 22" rotary table.
No. 8 Kempsmith universal, with dividing head 24" auto. feed.

DRILL PRESSES.

13" Acme, sensitive.
13" Rockford, sensitive.
14" Allen, sensitive.
14" Barnes, gear driven.
20" Milwaukee, plain.
20" Barnes, plain.
36" Grant, semi-radial.
24" Bickford, sliding head.
34" Bickford, sliding head.
Peerless, bench, 5-16" cap., (8).
3-spindle sensitive Henry & Wright high speed.

SHAPERS.

16" Cincinnati, crank.
24" Barker, crank.
24" Juengst, shifting belt.
24" Smith & Mills.
36"x36"x7' Gray planer.

MISCELLANEOUS.

Axle lathe, double end Niles.
Brake and folder comb., 4' Niagara.
Brass finishers' lathe, 15"x6'.
Broacher, No. 2 J. N. Lapointe.
Buffers, motor driven, (8).
Bulldozer, double end, wt. 7500 lbs.
Cold saw, 6" Q. M. S.
Fender wiring machine, Yoder.
Forming & bending roll, 10"x10" hvy.
Grinder, gear cutter, Gould & E.
Hammer, power, Robinson.
Hammer, trip, 25 lb. Mayer.
Hammer, drop, 600 lbs. Bement.
Keyseater, 1½" Morton.
Keyseater, No. 2 Davis.
Speed lathes, 10"x4' Seneca Falls "Star", (5).
Spinning lathes, 22" and 30".
Square shears, 30" Niagara, ft. p., (3).
Square shear, 36" Bertsch, 15" gap, foot power.
Squaring shear, 11' Ryerson, with rotary traveling cutter.
Steel brakes, 8' Chicago.
Toggle brakes, power, 6' Robinson.
Wire straightener, 3-16".
Worm gear hobber, 18" Grant-Lees.

Large Assortment of tinners' tools, folders, rolls, punches, shears, etc. Electric motors, drill grinders, arbor presses, chucks, machinists' bench vises.

FOR SALE BY

Wayne Machinery Co., Taylor St. & L. E. R. R., Fort Wayne, Ind.

Bolt cutters, ⅜".
Drill, 14" Champion, geared.
Drill, 20" Champion, p. f.
Drill, 30" Snyder, p. f., b. g.
Gear cutter, Walcott.
Grinder, No. 1 Woodward & Rogers, surface.
Lathe, 14"x6' Flather engine.
Lathe, 15"x5½' No. 1 American, brass.
Lathe, 16"x8', Greaves-Klusman.
Planer, 12"x12"x24" Wilkenson Co.
Planer, 16'x16"x3' Whitcomb.
Press, No. 32 Toledo.
Riveter, No. 530 Prouty.
Riveter, ⅜" Shuster.
Screw machine, 16" P. & W., g. f. h.
Shaper, 16" Hendey.
Shaper, 16" Wm. Barker.
Tire welder, No. 4 L. & A.
Welding machine, No. 6-A Toledo electric butt welder.

New tools for any requirement.

FOR SALE BY

Saxer-Creider Machinery Co., 314 Commerce Bldg., Erie, Pa.

Band saw, woodworking, 36", iron table.
Boring mill, 10' Betts, cone drive.
Cutting-off machine, 7½" Bement Miles, 12' bed.
Drills, No. 310 Baker, high duty, (6).
Flat turret lathe, 24" Conradson.
Jointer, wood, 16", with safety head, iron table.
Lathes, 20"x8' American, new, (7).
Lathe, 20"x10' Lodge & Shipley, q. c. g., d. b. g.
Lathe, 22"x14' Gleason, d. b. g., plain rest.
Lathe, 24"x12' Schumacher & Boye, v. c. g., d. b. g., (2).
Lathe, 36" pitt lathe, motor driven.
Miller, No. 5 Ingersol duplex knee type.
Planer, 24"x24"x8' Cincinnati, good as new.
Radial drill, plain, 5' Bickford, gear box drive.
Saw bench, patternmakers', 16" double spindle, iron table.
Slab miller, 20"x20' Ingersol.
Toggle press, No. 168½ Toledo.

FOR SALE BY

Sturges & Burn Mfg. Co. 508 So. Green St., Chicago, Ill.

New York Office: Suite 1650, No. 50 Church St.

HYDRAULIC PRESSES.

70-ton 20" stroke.
60-ton 20" stroke.
42-ton 32" stroke, (2).
50-ton 38" stroke, (2).
500-ton 5½" stroke, (2).
1200-ton 7" stroke.
Above presses are quick acting and equipped with operating valves piped to cylinders.

HYDRAULIC PUMPS.

Horizontal 4 plunger, 51 gal. per minute at 4000 lbs.
Horizontal 4 plunger, 42½ gal. per minute at 4000 lbs.
Horizontal 4 plunger, 15 gal. per minute at 4000 lbs.
Horizontal 2 plunger, 20 gal. per minute at 500 lbs. (2).

ACCUMULATORS.

8½"x12' stroke 4000 lbs.
6"x 8' stroke 4000 lbs.
8"x10' stroke 500 to 1000 lbs.
Above machinery used for a short time only and in fine condition.

POWER PRESSES.

No. 27-K Bliss 1000-ton knuckle joint press.
No. 60½ Bliss rack and pinion reducing or broaching presses, (3).
Special heavy geared reducing press, 20" stroke.
14-A Adriance double action drawing press.

TURRET LATHES.

Bullard hand turret lathes, little used, (20).

All above for immediate delivery. Write for particulars.

SECOND-HAND MACHINERY

FOR SALE BY

Broadway Machinery Co., 236-238 Broadway, Cincinnati, Ohio

Drill, 20" tapping attachment.
Drills, 20" (6).
Drill, 25" Barnes.
Gear cutter, No. 12 B. & S.
Gear cutters, 16" Bilgrim, (2).
Gear cutter, 36" G. & E.
Gear hobber, S. & S.
Grinders, Bath, (2).
Grinder, No. 24 Landis.
Grinder, surface, No. 2 B. & S.
Grinder, universal, No. 2 Cincinnati.
Engine lathes, all sizes.
Forming press, 10' geared.
Miller, No. 2 B. & S., universal.
Miller, No. 3 B. & S., plain.
Miller, No. 2 Cincinnati, universal.
Millers, No. 4 Cincinnati, b. g., (2).
Miller, No. 4 Cincinnati, hvy. duty.
Planer, 24"x6', 1 head.
Planer, 32"x10', 1 head.
Planer, 36"x10', 1 head.
Punch and Shears, No. 2 L. & A., (2).
Radial, 3' Cincinnati.
Radials, 3' Prentice, (2).
Radial, 4' Bickford.
Radial, 5' Bickford.
Radial, 5' Niles.
Shapers, 16" Smith & Mills, (2).
Shaper, 18" Steptoe, geared.
Shaper, 20" Smith & Mills.
Shaper, 20" Strowbridge.
Shaper, 30" geared.

FOR SALE BY

Cyril J. Bath & Co., Offices 428 Leader-News Bldg., Cleveland, O.
Warehouse 1031 West Front St.

In the difficult business of buying, why not let us help?
In Cleveland Stock

DRILLING MACHINES.

20" Prentice, hand lever fd., round swivel table, square planed base; good. (3).
20" Prentice, hand lever and power feed, round swivel table and square planed base; good. (3).
24" Barnes back geared power feed, stationary head, round swivel table, and square planed base; good.
26" Aurora sliding head, p. f., bk., grd., round swivel table and planed base.
4-spindle Foote-Burt rail drill, power feed pump, adjustable spindles on rail.

LATHES.

14"x 6' Reed, plain rest, with belt feed and change gears.
14"x 6' Reed, comp. rest, fair, b. f. and taper att., friction countershaft; good.
16"x 6' Pratt & Whitney, plain rest, taper attachment, belt feed, full equipment; good shape.
16"x6' Prentice, comp. rest and chuck, belt fd., hollow spdl., very good shape.
24"x24' Pond, comp. rest fitted with two-tool shaft, turning rest and steady rests; all complete and in good shape.
24"x16' Pond Machine Works, comp. rest; very good.

MISCELLANEOUS.

Boring mill, 36" Gisholt, single turret head, late model, A-1.
Chucking machines, Nos. 22 and 25 New Britain 4-spindle auto.; new.
Cylinder borer, Foote-Burt 2-spindle adj., 11" feed, 4" spindles, worm drive, table feed; good as new.
Cylinder boring machines, 4-spindle fixed head Foote-Burt; good as new, (3).
Gear hobber, Grant-Lees, for spirals, worms or spurs, capacity 4" face, 8" diam., 5 d. p.; very good.
Gear and pinion cutter, 36x16 G. & E.; good.
Grinder, plain, 20x144 Landis, motor driven wheel.
Grinder, 10"x20" No. 1 Landis, full univ. and equipment for internal, external and face grinding, belt feed and countershaft.
Hammer, upright strap, 150 lb. Bradley; good.
Hammer, steam, 800 lb. Sellers, single frame, 12" cylinder; very good.
Nut tapper, 4-spindle Acme, cap. up to 1½" nuts; good as new.
Planer 24"x 6' Pease, single head, 2-side drive, complete; good condition.
Press, Bliss No. 2 Stiles, 12" throat, 1½" stroke, 24" fly wheel; good.
Radial, plain, 3' Bickford, cone drive.
Slotter, crank, 12" Bement-Miles, 30" round table, all feeds; very good.
Stud threading machine, National-Acme automatic, good as new, cap. up to 1"x8" studs.
Turret lathe, 2x24 Warney & Swasey, hollow hexagon; good shape.
Turret machines, 7x14 P. & J. automatic, with equipment; in good shape, (2).

FOR SALE BY

The Machinery Warehouse, 38th & Laflin Sts., Chicago, Ill.

The following 60 cycle, 3 phase A. C. Motors:

100 h. p. General Electric	720 r. p. m.	440 v.
40 h. p. Triumph	1150 r. p. m.	440 v.
7½ h. p. Westinghouse	1120 r. p. m.	220 v.
7½ h. p. Allis-C	1130 r. p. m.	220 v.
7½ h. p. Allis-C	1700 r. p. m.	220 v.
7½ h. p. Western	860 r. p. m.	220 v.
5 h. p. Western	1700 r. p. m.	220 v.

We will furnish these machines with condition guaranteed, with bases, pulleys and starters for all machines above 5 h. p.

FOR SALE BY

The Canton Machine Shop, 320 Rex Ave., Canton, Ohio

Belt polishing machine.
Butfing lathe.
Buffing lathe, double end.
Die grinder.
Drill, 20", back geared.
Drill, 24", s. h., b. g.
Drill, 30", s. h., b. g.
Drill, 36", s. h., b. g.
Emery grinders, (3).
Lathe, 13"x5' Barnes.
Lathe, 16"x8', plain.
Lathe, 18"x8' Mueller.
Lathe, 20"x12' P. & W., t. a.
Lathe, 24"x10', 5" raise block.
Milling machine, No. 5 Brainard.
Pipe machine, No. 7 Jarecki.
Pipe machine, No. 11 Jarecki.
Punch press, No. 5 Farrell.
Saw, power.

FOR SALE BY

Peninsular Machinery Co., 110 Beaubien St., Detroit, Mich.

Countershaft, 1 15-16" with 18x5 t. & l.
Drill, 10" Hoefer, disc.
Drill, 14" single spindle sensitive.
Drill, 12" Barr sensitive.
Drill, 4-spindle Bickford.
Drilling head, 2-spindle, 3" to 8".
Flexible shaft, with c. s., Stow.
Forming roll, 14 ga. 48" long.
Grinder, emery, No. 3 Blount.
Grinder, cutter, No. 1 Garvin.
Grinder, cutter and tool, LeBlond.
Grinder, twist drill, New Yankee.
Hack saw, No. 11 Millers Falls.
Lathe, 14x8 LeBlond, rapid prod.
Lathe, 14x6 LeBlond, rapid prod.
Lathe, 14x6 LeBlond, engine, c. r.
Lathe, 14x8 LeBlond, engine, c. r.
Lathe, 17x10 LeBlond, automobile.
Miller, hand, No. 1 Whitney type.
Miller, No. 1 Van Norman, hand.
Miller, No. 1 U. S., hand.
Press, No. 1B, Michigan, plain.
Screw machine, plain, No. 0 Foster.
Screw machine, plain, No. 3 Foster.
Screw machine, grd., No. 3 Foster.
Screw machine, grd., No. 5 Foster.
Screw machine, grd., No. 8 Foster.
Screw machine, grd., No. 10 Foster.

FOR SALE BY

C. M. Thompson Co., 35 S. Clinton St., Chicago

NEW MACHINES.

Die heads, Jones & Lamson No. 6, 2" capacity.
Grinders, Grand Rapids cutter and tool grinders.
Grinding stands, for immediate delivery.
Lathes, Champion Tool Works lathes, for immediate delivery.
Metal cutting machines, Racine high speed.
Shapers, crank, Barker.

SECOND-HAND MACHINES.

Foot presses.
Gear cutter, automatic, No. 3 Brown & Sharpe 26x8, used 30 days.
Grinder, cylinder, No. 60 Heald, fine condition.
Grinder, surface, Saxon, with 7x17 magnetic chuck.
Lathe, 10x4 Star.
Lathe, 22x12 Schumacher & Boye.
Lathes, 10", 14" and 22".
Milling mch., No. 3 Cinti., plain.
Planer, 24x24x6 Cincinnati.
Shaper, 16" crank.

FOR SALE BY

Herman L. Winterer, 908-910 Beach St., Philadelphia, Pa.

LATHES.

38"x14' Fifield.
36"x 8' Harrington.
31"x16' Fifield.
29"x18'6" Schumacher & Boye.
28"x10' Pittsburgh, d. b. g.
22"x10' Johnson.
21"x28' LeBlond dbl. combination.
21"x14' Blaisdell, b. g.
21"x10' Johnson.
21"x10' Lodge & Davis, c. r.
20"x 8' Flather, c. r.
20"x 8' Putnam.
20"x 8' Perkins.
20"x10' Cincinnati.
19½"x10' Fitchburg, b. g., (2).
18"x12' New Haven, b. g.
18"x10' Davis.
18"x 6' Lodge & Davis.

TURRET LATHES.

4"x28" Pond.
7"x14" Potter & J., semi-automatic.
3"x28" Lodge & S., chucking.
27" chucking.

MISCELLANEOUS.

Boring mill, hor., 48" Beaman & S.
Cold saw, 20" Newton.
Drill presses, all sizes.
Grinder, universal, No. 1 Cincinnati.
Hammer, spring belt, 100 lbs. Mansillon.
Keyseater, No. 2 Davis.
Milling mche., univ., No. 1 B. & S.
Pipe machine, 6" Wells.
Planers, 20 to 24" with 6 to 8' beds, (6).
Planer, 60"x60"x9' Betts.
Punch, 12" gap, Fisher, cap. 1" in 1".
Punch and shear, d. e., 21" throat, capacity, ½".
Punch and shear, d. e., 21" throat, capacity 1".
Shapers, 20" Gould & Eberhardt, (2).
Shaper, 20" Steptoe.
Shear, continuous slitting, cap. ¾".

Large assortment of Boilermakers' and General Machinery.
Send for complete list.

FOR SALE BY

The Osborne & Sexton Machinery Co., Columbus, Ohio.

LATHES AND TURRET LATHES.

13-15-16 and 18 O. & S., h.s., c.r., new.
14"x 6' Bradford, power feed turret.
16"x 6' Greaves & K., h. s., c. r., (2).
22"x 8' Schumacher & B., h. s., c. r.
24"x10' Springfield, h. s., cp. rest.
24"x12' LeBlond, h. s., cp. rest.
24"x14' LeBlond, h. s., cp. rest.
24"x16' Dietz, 8" h. s., c. r., taper.
15"x 6' Fox universal lathe.
16"x 6' back geared turret.
18"x 6' Mueller, turret on shears.
56"x14' Pond, triple geared.
24" Gisholt, 4" hollow spindle.
Warner & Swasey No. 6.
Warner & Swasey No. 2, hol. hex.
1" Garvin hand screw machine.

SHAPERS AND PLANERS.

16" Springfield, crank, pr. down fd.
16" & 20" Cincinnati, crank, bk. gd.
20" Hamilton, bk. grd. crank.
22" Walcott power down feed.
20"x20"x 4' Industrial.
24"x24"x6, Sellers.
30"x30"x12' Pond, 1 head.
36"x36"x12' American, 4 heads.
36"x36"x14' Sellers.
72"x56"x17' Sellers, 2 heads.

MISCELLANEOUS.

Boring mills, 8' Betts, 3 hds., (2).
Broacher, 64" stroke Waterbury.
Cut-off machine, 3" Davis.
Drills, flexible shaft (2).
Drills, sensitive, 1, 2 & 3 spdl.
Drills, 24, 26, 28 & 30" sliding hd.
Drill, 3-sp., 21" Hoefer, pr. fd.
Drill, turret, 6-hole Quint.
Drill, 7-spindle, adj. centers.
Gear cutters, B. & S. No. 13, (2).
Grinder, tool, Gleason.
Grinder, 10"x20" Landis universal.
Grinder, 12"x32" Landis plain.
Hammers, helve, 40 lb. Bradley.
Hammer, power, 100 lb. upright.
Hammer, steam, 1200 lb., sgl. leg.
Keyseater Baker Bros. 1½ keyways.
Miller, plain, 34"x9"x20" Cincinnati.
Miller, Lincoln, 20" Ames, pwr. fd.
Miller, 24x7x19 Cincinnati.
Miller, Gooley & Edlund, 38" fd.
Motors, 2 to 25 h. p., 3 phase, 220 v.
Pipe mch., 2" & 4", with cut-off.
Press, 1500 lb. No. 1½ Hubbard, inc.
Press, 7,000 lb. Waterbury, 6½" stroke.
Punch & shear, 12" throat, 2" cap'y.
Punch and shear, No. 6 Long & A.
Punch and shear, 1½"x1", 24" throat.
Radial, 3½ Prentice, gear box.
Radial, 3' Bickford, universal table.
Riveter, ½" Shuster, 20" throat.
Straightening rolls, 30".
Tapper, vertical, Garvin No. 1.
Variable speed transmission, Reeves.

FOR SALE BY

Federal Machinery Sales Co., 8 N. Jefferson St., Chicago, Ill.

DRILLING MACHINES.

20" Barnes, square base, wheel and lever feed.
1, 2, 3, and 4-spindle sensitive drills.
28" Barnes, sliding hd., gd. pr. feed, back gear.

GRINDERS.

No. 38 Safety plow grinder.
No. 38 Safety plow grinder.

LATHES.

11"x4' Wells speed lathes, (2).
14"x6' Ashton, c. r., h. s.
14"x8' Ryerson, c. r., h. s.
16"x8' Pratt & Whitney, c. r., h. s. taper att.
16"x8' Lodge & Davis, c. r., h. s.
17"x8' Cincinnati, c. r., h. s.
18"x12' American, c. r., h. s.
26"x12' Monarch, q. c. g., c. r., h. s.

PLANERS.

32"x30"x10' New Haven one rail head.
42"x42"x10' Hewes and Phillips, one rail, one side head.

MILLING MACHINES.

No. 0 Steptoe, plain.
No. 3 Fox, plain.
No. 14 Garvin, plain.
No. 2 Kempsmith, plain, all feeds.
No. 1½ American univ., complete.

MISCELLANEOUS.

Blower, No. ½ Garden City.
Cutting-off machine, 4" Hurlbut.
Gear cutter, 24" Gould & Eberhardt, spur and bevel.
Keyseater, No. 1 Davis, 3 cutters.
Press, C-2 Ferracute, o. b. i.
Press, Consolidated dbl. crank incl., 1" stroke, 34"x42" fly wheel, A1.

FOR BY SALE

Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.

LATHES.

11"x 5' Reed, p. c. g.
14"x 5' Fitchburg, p. c. g.
14"x 6' Lodge & Shipley. q. c., (5).
16"x10' Flather, with taper. q.c., (2).
17"x 8' Johnson, p. c. g., (2).
17"x 8' Sidney. d. b. g. & q. c., (10).
18"x 8' Milwaukee, sgl. bk. gr., (9).
18"x10' Hamilton. p. c. g.
18"x10' Superior, d.b.g. & q. c., (10).
18"x10' Milwaukee, sgl. bk. gr., (3).
18"x10' Flather, q. c.
22x12' Flather, with taper, q. c.

SCREW MACHINES AND TURRET LATHES.

No. 1 Bardons & Oliver.
No. 2 Bardons & Oliver.
No. 2 Garvin.
No. 4 Foster, (4).
Dreses, 2" sp., b.g. & frict. hd. (3).
26" swing Pond, with set-over turret.
No. 3 Garvin, b. g. & friction head.
No. 2½ Garvin, b. g. & friction head.
No. 3 P. & W., b. g. & friction head.
3x36 Jones & Lamson.
24" Davis chucking lathes, (3).
Potter & J. auto. chucking, (5).

MILLING MACHINES.

No. 3 Garvin, table 17"x7½", (4).
No. 2 Pratt & W., table 20"x7", (5).
Milwaukee hand millers, (6).
B. & S. 36" boring mills, tur.hd., (2).

MISCELLANEOUS.

Broaching machine, No. 2 Lapointe.
Cold cutting-off saws, capacities 4", 5" and 6" round.
Dynamo, 17 k. w. Diehl.
Gear cutters, 36" Whiton and 36" Gould.
Hammer, cushioned helve, 25 lb.
Lathe bed turret, heavy, for about 32" lathe.
Pipe cutting and threading machines, 4" and 6".
Pipe machine, 2" Cox, hand and power.
Planers, 30"x30"x6' H. B. Smith, with 1 head; 24"x24"x8' New Haven, with 1 head; 17"x17"x3' Draper, with 1 head.
Pneumatic portable riveter.
Saws, Atkins "Quick Cut", (3).
Saw sharpening grinder, Espen Lucas automatic.
Slab miller, 17"x8' Beaman & Smith, with two horizontal spindles.
Stamping and punching presses, a large number of the open back inclinable.
Melting furnaces, metal band saws, drill presses, grinders, several assorted sizes sensitive drill presses, etc.

SECOND-HAND MACHINERY

FOR SALE BY

McMullen Machinery Co., - - Grand Rapids, Michigan

MILLING MACHINES.

No. 25 Becker, plain.
No. 5 Brainerd, plain, (2).
No. 0 B. & S., plain.
No. 1 B. & S., universal.
No. 3 Garvin, hand, (2).
No. 4 Garvin, hand.
Chicago, hand.
No. 7H Becker, Lincoln.
Lathe & Morse, Lincoln, (3).
Garvin profiler.

MISCELLANEOUS.

Automatics, 2" Cleveland, (2).
Drill, No. 2 Quint 6-spindle turret.
Drill, No. 1 Avey 3 spindle.
Drill, Henry & Wright, 3 spindle.
Engine lathe, 24x24 Fifield.
Fanning mill, Baird.
Planer, 24"x24"x8' Lodge & Davis.
Screw machine, 1½x9 Acme, p. f.
Screw machine, 2¼" Oliver, p. f.
Screw mche. No. 2 Warner & Swasey.

Send for complete list.

FOR SALE BY

Dale-Brewster Machinery Co., Inc.,

547 W. Washington Blvd., Chicago - 30 Church St., New York

Automatics, 2¾" used Cleveland.
Boring mill, 36" Baush & Harris, 2 heads.
Boring mill, 52" Niles vertical, stationary head.
Cutter relieving machines.
Drills, Nos. 1 and 2 Langelier, h. s.. b. b., sensitive.
Drills, D-4, D-3 and D-1 Colburn, used.
Drilling and boring machines, heavy duty horizontal.
Grinder, 20"x36" old style B. & S.
Grinder, No. 3 used Brown & Sharpe.
Lathe, 16"x8' new Davis.
Lathe, 20"x7'6" new heavy duty plain turning.
Lathe, 26"x12' used Star.
Planer, 26"x26"x8' Gray, 1 head.
Planer, 30"x30"x8' used Pond, 1 head.
Planer, 36"x36"x12' used Powell, head.
Sheet metal cutter, new No. 1 Gray.

Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List,** a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

Purinton & Smith

—carry the largest stock of new machine tools between Boston and New York, as well as used tools in fine operating condition. They are—

The New England Dealers

—from whom users in that section can secure both a good selection and the best of attention, because "good service" is their constant aim, and because they are centrally located at—

Hartford, Conn.

IN STOCK
FOR
PROMPT SHIPMENT

1—⅝" to ¾" Cleveland Automatic Screw Machine, S. H.
1—Ackley Duplex Piston Ring Miller, new.
1—No. 2 Wilmarth & Morman Surface Grinder, new.
1—Fraser Convertible Universal Grinder, new.
1—No. 1 Garvin Universal Miller, new.
1—2¼ Modern Flat Turret Lathe, S. H.
1—20"x10' Bradford Q. C. Lathe, new.
1—18"x6' Lodge & Shipley Q. C. Lathe, S. H.

W. J. Baird Machinery Co.

54-56 Jefferson Ave., Detroit, Mich.

MACHINE TOOLS MADE RIGHT—

LANDIS 10"x66" Plain Grinder.

BROWN & SHARPE No. 5 Screw Machine. 2" capacity.

GLEASON 12" Bevel Gear Generator.

WHITCOMB 17"x17"x4' Planers.

WHEELER 22x"x22"x5' Planers.

WHITCOMB 22"x22"x6' Planer.

WHITCOMB 26"x26"x6' Planer.

BLAISDELL 18" Crank Planers.

BELDEN 18" Crank Planers.

WHITCOMB 18" Crank Planer.

HILL, CLARKE & CO., Inc.

The Machinery Merchants

BOSTON, MASS.
156 Oliver St.

NEW YORK CITY
136 Cedar St.

Two Pratt & Whitney Plain Cylindrical Grinders, capacity 6" x 48", in excellent condition.

One Springfield Machine Tool Co. Cylindrical Grinder, capacity 12" x 96".

One Brown & Sharpe Universal Grinder, capacity 12" x 40".

One 21" Gisholt Turret Lathe, with Taper attachment.

One 1½" x 18" Warner & Swasey Hollow Hexagon Turret Lathe, back geared, friction head, with collets up to 1½", standard equipment, in excellent condition.

One Powell Planer, 36" x 36" x 10', with two heads on the crossrail, in excellent condition.

One 37" Niles Vertical Boring Mill, two heads, in excellent condition.

One Wheeler Planer, 24" x 24" x 6', in excellent condition, one head.

One Whitcomb Crank Planer, used less than two years, in excellent condition.

We also carry a line of Shapers, Milling Machines, Lathes, Upright Drills, etc.

Send us your inquiries

Factory & Mill Supply Co.

137 Oliver St., Boston, Mass.

MILLING MACHINES

No. 2 Van Norman Duplex.
No. 25 Becker.
No. 7 Becker, Lincoln type.
Whitney Hand Miller.
Hendey Oscillating.

GRINDERS

Cincinnati No. 2 Universal Tool and Cutter.
Greenfield Universal Tool and Cutter.
2 12"x42" Landis Plain.
Automatic Grinder for cold saws up to 25" diam.

MISCELLANEOUS

Drill, 4-spindle, with power feed, 22" and 18".
Drop Hammer, 50 lb.
Gear Cutter, 36" spur and bevel.
Foundry Blowers, small.
2 Lathes, 13"x7' Putnam.
Lathe, 42"x14' engine lathe.
4 Lathes Taper Attachment.
Oil separator, small.
Pinion Cutter, 5" cap.
4 Screw machines, P. & W. automatic.
Shapers, 18" Stockbridge, p. d. f.
1 Slotter, 10" New Haven.
Suspension drill.
Turret lathe, 2¼" hole.

T. Crowther & Company, Inc.

170 Oliver Street, Boston, Mass.

Second-Hand Machinery

Boring Machines.

No. 1 Cleveland horizontal boring, drilling, milling machine, extra length table, good as new, latest model.
Bement horizontal, 2½" bar.
36" Niles pulley borer.

Drills.

Sipp three spindle high speed ball bearing sensitive.
Barr four spindle sensitive.
20" Champion stationary head, belt feed, back gears.
24" Sibley sliding head, belt feed, back gears.
24" Barnes stationary head, belt feed, back gears.
34" Barnes sliding head, belt feed, back gears.
Four spindle 20" Barnes gang, box type, one back geared, three belt power feed, one tapping reverse.
Four spindle No. 413 Baker Bros. heavy type gang.

Gear Cutters.

16" Brown & Sharpe spur and bevel, with countershaft.
26" No. 3 Brown & Sharpe spur gear.

Grinders.

12"x24" Modern plain, self contained, capacity 24" wheels, special extension for 72" centers, good as new.
No. 60 Heald cylinder grinder, excellent condition.
No. 300 Safety Emery Wheel Co. plow jointer.

Engine Lathes, Etc.

Rivett No. 4 bench, mounted on self-contained cabinet, D. C. motor drive with motor, complete set collets by 16ths, good as new.
14"x6' Blaisdell, rise and fall.
16"x6' Bradford, compound rest, change gears.
16"x8' Bradford, compound rest, change gears, etc.
20"x8' Blaisdell, with power feed turret on bed.
20"x8' Blaisdell, plain rest.
21"x10' Bradford, compound rest, change gears, five step cone.
22"x10' LeBlond, compound rest, change gears, turret on carriage.
36"x8' Putnam pulley turning lathe, double plain rest.
24"x6' Plamondon back geared pulley lathe, double plain rest.
24"x12' Reed, compound rest, change gears, four step cone, solid spindle.

Planers.

26"x26"x6' Cincinnati, one head, new model, 2-speed countershaft.
30x"30"x10' Detrick & Harvey open side, one head.

Shapers.

10" Fitchburg traveling head.
24" Lodge & Davis, with vise and countershaft.

Screw Machines and Turret Lathes.

1½"x9" Acme wire feed screw machine, power feed turret.
⅝" Gates hand screw machine.
1½" Gray turret lathe.
Small Cleveland automatic.
¾" Hartford automatic.
1⅛" Hartford automatic.

Miscellaneous.

2½" Betts cutting-off machine.
No. 1 Baker keyseater, with cutters, bars, etc.
30" Band saw.
Q. & C. hack saw.
Burke 12" cold saw.
12" Lennox hand punch, 12" throat.

Marshall & Huschart Machinery Co.

17 S. Jefferson St.
Chicago, Ill.

915 Chemical Building
St. Louis, Mo.

NATCO DRILLS

Guaranteed Equal to New

Four Type D-9, Eight Spindles.

One Type F Rectangular Head, Sixteen Spindles.

Vertical Milling Machine

No. 5 Brown & Sharpe, with Rotary Attachment.

Boring Mill

Binsse Horizontal, 2½" Bar.

Lynd-Farquhar Company

419-425 Atlantic Ave., - Boston, Mass.

LATHES

No. 874—24"x12' 3-step cone, dbl. bk. grd. hd., L. & S. Engine Lathe.
No. 835—18"x8', 3-step cone, D. B. G. Hd., L. & S. Engine Lathe.
No. 829—20"x10' sgl. step, D. B. G., L. & S. Lathe, Turret on Bed.

OTHER MACHINES

No. 1337—Crompton-Knowles LoomWks. Keyseater, 60" st., 48" sw.
No. 680—Safety Tool Grinder, 4"x32" Emery Wheels.
Nos. 608-662—Safety Wet Tool Grinders, 2"x16" and 4"x30" Wheels.
No. 1379—Universal Swivel Table for Radial Drill.
No. 2083—6" Hersey Rotary Water Meter.
No. 1336—No. 00 Sturtevant Blower.
No. 2531—Sturtevant Blower, 2½" outlet.
1—15 h. p. Gas Engine, 215 r. p. m.
No. 2008—Triplex Sgl. Acting Vert. Deane Pump, 4½" bore, 3½" st.

USED MOTORS

No. 969—1½ H. P. Bullock, 220 volt, D. C., 600 R. P. M.
No. 963—10 H. P. Triumph, 220 volt, D. C., 200-800 R. P. M.
No. 948—25 H. P. Allis-Chalmers, 220 volt, D. C., 750 R. P. M.

DELIVERY NOW

The Lodge & Shipley Mch. Tool Co., Cincinnati, Ohio, U. S. A.

USED MACHINERY

5—No. 310 **Baker** High Speed Heavy Duty Drilling Machines, Cap. 3".

10—**Racine** High Speed Shrapnel Hack Sawing Mches., practically New.

50—**Lathes**, 16" to 20" swing, suitable for rough work.

1—100-ton **Hydraulic** Wheel Press, cap. 42" between rails, 6' centers.

1—**Hydraulic** Accumulator with pump, size 12"x10'.

1—**Hydraulic** Traveling Crane, double 12" I beams, 22' 6" centers, heavy chain connections, 8-ton capacity, diam. piston 10", stroke 10', lift about 40 feet.

3—**Hydraulic** Jib Cranes, center posts double 12" channels 21' long, arms double 9" channels 19' long, lift 7', capacity 5 tons.

4—**Jib Cranes**, center posts double 12" channels 21' long, arms single 7" I beams 15' long, Capacity 1200 lbs., lift 6' complete with hoist

1—**Jib Crane**, center posts single 10" I beam, 12' long, arm single 10" I beam 15' long, capacity 2000 lbs., lift 6', with hoist.

6—**Reading** 5-ton Hand Cranes, 18' span with trolley and 5-ton **Yale & Towne** Triplex Hoists, 14' lift, 15" I beams, practically new.

3—5-ton **Yale & Towne** Triplex Hoists, 12' lift, equal to new.

1—2-ton, 3phase, 60 cycle, 220 v. **Shepard** Electric Trolley Crane, Westinghouse Motor, 12' lift, A-1 condition.

2—3000 lb. **Harrington** Hoists with trolley for ¾"x4" track.

1—26"x25' **Pond** Engine Lathe, 20' centers, compound rest.

1—20"x72" No. 5 **Brown & Sharpe** Universal grinder.

1—24" **Smith & Silk** Triple Geared Shaper.

1—No. 12 Gear Hobber, **Barber-Colman, New.**

1—No. 48" **Niles** Heavy Car Wheel Borer, with Crane.

1—72"x60"x18' **Harrisburg** Planer, with two heads on rail.

1—No. 60 **Oliver** Pattern Makers' Universal Saw Bench.

1—Set Boiler Rolls, **Niles**, cap. 8½'x11/16" plate, drop end.

1—Set Boiler Rolls, capacity 10'x⅜" plate, drop end.

1—Angle Shear, **Reade**, single, cap. 6x6x¾, arranged for motor drive.

We have other machines in stock. What do you want? We are looking for Heavy Used Machine Tools. What have you to offer for sale or exchange?

D. M. Osborne Machinery Co.

Office: American Trust Bldg. Warehouse: West 9th & Front Sts.

Cleveland, Ohio

"New York's Greatest Clearing House—New York's Lowest Prices—J. J. McCabe"

Conscious of the unusual demand

by great Plants all over, with whom we have been dealing for years, we are constantly on the alert to take advantage of trade conditions—to exercise foresight—and anticipate events that are to come.

We are therefore in position right now to offer

The following NEW and used Machine Tools of a particular Standard for Immediate Shipment

NEW LATHES

10—McCabe "double-spindle" latest heavy pattern 26-48 in. swing, 12 ft. beds, triple-geared, hollow-spindles, 2⅛ in. holes, heavy deep bed, extending to floor, counter-shafts and full regular equipment.
3—Standard 32 in. x 12 ft., Quick-change, 3-step cone, dble. bk.-grs.
2—Standard 24 in. x 18 ft., Semi-change, 3-step cone, dble. bk.-grs.
3—Standard 24 in. x 14 ft., Semi-change, 3-step cone, dble. bk.-grs.
5—Standard 21 in. x 12 ft., Quick-change, 3-step cone, dble. bk.-grs.
4—Standard 21 in. x 10 ft., Quick-change, 3-step cone, dble. bk.-grs.
10—Standard 18 in. x 12 ft., Quick-change, 3-step cone, dble. bk.-grs.
8—Standard 18 in. x 10 ft., Quick-change, 3-step cone, dble. bk.-grs.
6—Standard 18 in. x 8 ft., Quick-change, 3-step cone, dble. bk.-grs.
2—Standard 16 in. x 8 ft., Quick-change, single back-gears.
2—Standard 16 in. x 6 ft., Semi-change, single back-gears.

NEW RADIAL DRILLS

2—2½ ft. Arm, Tapping att., Speed-box, Single Pulley Drive.
3—3½ ft. Arm, Tapping att., Speed-box, Single Pulley Drive.
4—4 ft. Arm, Tapping att., Speed-box, Single Pulley Drive.

NEW SHAPERS

1—12 in. Plain, Crank.
3—20 in. Back-geared, Crank.
2—25 in. Back-geared, Crank.
2—28 in. Back-geared, Crank, Speed-box, Single Pulley Drive.
4—32 in. Back-geared, Crank, Speed-box, Single Pulley Drive.

HEAVY 16 FT. SET OF BENDING ROLLS

"NILES-BEMENT-POND" (BEMENT WORKS) HEAVY POWER BENDING ROLLS 16 ft. 2 in. between Housings, capacity for handling up to 1½ in. plates; Drop-end Housing, four (4) Rolls, each 20 in. [illegible]

HEAVY-RADIAL-DRILLS | SLOTTERS | PLATE PLANERS

2—Standard 16 in. x 8 ft., Quick-change, 3-step cone, dble. bk.-gh.
2—Standard 16 in. x 8 ft., Quick-change, single back-gears.
2—Standard 16 in. x 6 ft., 3-mi-change, single back-gears.

NILES-BEMENT-POND (BEMENT WORKS) HEAVY POWER BENDING ROLLS 16 ft. 2 in. between Housings, capacity for bending up to 1½ in. plates; Drop-end Housing, four (4) Rolls each 20 in. [illegible]

HEAVY-RADIAL-DRILLS

8' arm, Pond M. T. Co., tapping att.
6½' arm, Niles, fan-base, motor-dr.
5' arm, Niles, semi-universal.
2½' arm, Bement-Miles, heavy.

TURRET LATHES

21" swing, gap 32" Gisholt.
2x24 Jones & L. sliding head.
20" swing (2) full-auto. Potter & J.

SHAPERS

28" triple-geared Smith & Mills.
24" crank, Gould & Eberhardt.
22" crank, Gould & Eberhardt.
20" crank, Gould & Eberhardt.
12" traveling-hd. Wm. Sellers Co.

MILLING MACHINES

60" vertical, Bement-Miles.
42" vertical Niles Tool Works.
Lincoln type (10) tables 27"x6".
Planer type, 24"x8' Bement-Miles.
Planer type, 24"x6' Ingersoll.

HAMMERS

4,500-lb. dbl-frame, Miles.
2,500-lb. single-fr. Bement-Miles.
1,000-lb. single-fr. Miles.
600-lb. single-fr. Bement.
1,200-lb. belt-drop, Miner & Peck.
900-lb. belt-drop, Wms. & White.
50-lb. (2) helve, Bradley.

SLOTTERS

30" Key-seater & Slotter, Baker.
18" stroke, Wm. Sellers & Co.
12" stroke, Wm. Sellers & Co.
9" stroke, Bement.

PUNCHES AND SHEARS

60" gap horiz. cap'y 1¼" thru 1¼" Bement-Miles.
48" gap, Hilles & Jones.
30" gap, Wm. Sellers & Co.
30" gap, Hilles & Jones, twin with spacing table 30'.
30" gap, Lennox splittingshears.
14" gap, single-end punch.

PLANERS

42"x42"x10' Putnam, 3 heads.
42"x42"x10' Putnam, 2 heads.
36"x36"x11½' Sellers, 1 head.
36"x36"x8' Putnam, 1 head.
32"x32"x8' Pond, 2 heads.
30"x30"x6' Pond, 1 head.
28"x28"x9' Putnam, 1 head.
26"x26"x6' Fitchburg, 1 head.
24"x24"x6' Sellers, 1 head.
24"x24"x5' Sellers, 1 head.

WHEEL LATHES--AXLE LATHE

90" swing, dble.-hd. Bement-Miles.
42" swing, dble.-hd. Bement-Miles.
28"x15' dble. axle lathe, Bridgeford.

PLATE PLANERS

21' 10" Niles Tool Works.
14' Wm. Sellers & Co.

LATHES—Triple-geared

60" swing, 24' bed, New Haven.
56" swing, 28' bed, Putnam.
26-48" swing, 16' bed, McCabe dbl.-sp. lathe.
26-48" swing, 14' bed, McCabe dbl.-spindle lathe, motor-driven.
26-48" swing, 10' bed, McCabe dbl.-spindle lathe.

Back-geared

36" swing, 16' bed, Putnam.
28" swing, 36' bed, Fay & Scott.
24" swing, 15' bed, Bement.
20" swing, 14' bed, Hamilton.
18" swing, 12' bed, Sch. & Boye.
18" swing, 10' bed, Porter.
18" swing, 8' bed, LeBlond.
16" swing, 6' bed, LeBlond.

OTHER TOOLS

36" gear shaper, Fellows.
No. 2 key-seater, Baker.
18-spindle multiple drill, Baush.
36" turret-hd. boring mill, B. & S.
6-spindle nut tapper, Acme.
150-ton wheel press.
300-ton wheel press.
2" bolt cutter, Putnam.
Bending rolls 6' 10" bet. housings.
No. 2 die-sinker, Pratt & Whit.
Boiler clamps, 10' 6".

J. J. McCabe 149 Broadway New York

ReMANUFACTURED
-(ORIGINATED BY US)-
MACHINE TOOLS
FOR QUICK SHIPMENT

At Chicago—The Great Machinery Center

RADIAL DRILLS.
3—5′ Niles Semi-Universal.
1—4′ Niles Full Universal.
1—3½′ Western.
2—2½′ Fosdick.
1 each—2½′ Dreses, 2½′ Gang.
3—2½′ Mueller.

HORIZ. BORING MACHINES.
1—No. 9 Beaman & Smith Floor Type, 3½″ Spindle.
1—2 spindle Beaman & Smith Cyl.
1—No. 4 Newton 2-spindle Cylinder.
1—Lucas, 3″ bar.
1—Binsse, 3″ bar.
1—No. 3 Barnes Double End.
1—Betts, 2½″ bar.
1—Bement, 2½″ bar.
1—Binsse, 2½″ bar.
1—Beaman & Smith, 2½″ bar.
12—No. 1 Pratt & Whitney 2-spindle Rifle Barrel Drilling Machines.
1—2-spindle Niles Car Brass Borer.

MILLING MACHINES.
1—No. 3 Beaman & Smith Duplex.
4—No. 2 Pratt & Whitney Lincoln.
1—No. 2 Carter & Hakes Lincoln.
1—No. 7 Brainard Lincoln.
1—No. 2-B Brown & Sharpe.
1—No. 5 Schuchardt & Schutte.
1—No.1-B Plain Kearney & Trecker.
1—No. 1 Kearney & Trecker.
1—No. 25 Becker.
1—No. O-Y Brown & Sharpe.

PLANERS.
1—87″x48″x18′ Woodward & P., 4hds.
1—36″x36″x14′ Gray Ex. Hvy. 2 hds.
1—36″x36″x12′ Gray, 1 head.
1—36″x36″x10′ Gray, 1 head.
1—36″x36″x10′ Gray, 2 heads.
1—34″x26″x 8′ American.
1—24″x24″x 6′ Flather.
1—24″x24″x 4′ Gray.
1—22″x22″x 6′ American.

VERTICAL BORING MILLS.
1—72″ Bickford.
1 each—42″ Colburn, 42″ Bullard.
1—41″ Bullard.
1 each—37″ Bridgeport, 37″ Bullard.
1—36″ Brown & S. chucking mche.
1 each—34″ Gisholt, 34″ Bullard.
1 each—32″ Rogers, 31″ Baush.
2—30″ Bullard.

GRINDERS.
1—No. 5 Bath Duplex Internal.
2—No. 1½ Landis Internal.
1—Diamond Face.
3—No. 14 Brown & Sharpe, Plain.

PRESSES.
1—No.17 Williams & White, Dbl. E.
1—No. 4 Long & Allstatter.
1—No. 6 Long & Allstatter.
1—No. 23½-B Niagara Toggle.
1—No. 102-S Bliss.
1—No. 5 Bliss.
1—No. 3 Stiles.
1—No. 20-U Ryerson.
1—No. 5 Niagara.
1—No. 30 Perkins.
1—No. 0 Walsh.

TURRET LATHES.
1—2″x36″ Pratt & Whitney.
2—2½″x26″ Greenlee.
1—No. 6-2″ Foster.
3—2″x24″ Jones & Lamson Grd. Hd.
4—2″x24″ Jones & Lamson Cone Hd.
2—24″ Gisholt.
1—24″ Warner & Swasey.
2—No. 2 Warner & Swasey Univ.
1—15″ Bardons & Oliver.
2—No. 4 1½″ Wood.
2—No. 4 13″ Wood.
1—13″ Bardons & Oliver.
1—No. 3 1½″ Wood.
2—No. 3 13″ Wood.
1—No. 3 13″ Bardons & Oliver.
1—13″ Foster.
1—No. 2 13″ Wood.

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125 N. CANAL ST., CHICAGO, ILL.

METAL MATERIALS

FOR SALE BY

International Equipment Co., 1657 Monadnock Block, Chicago.

MACHINE AND CAP SCREWS.	PIECES	LIST, LESS
7/16-14x1½" Hex. Hd. Cap Screws U. S. Thread	29,143	60%
7/16-14x1¾" " " " " " " " "	1 200	60 "
10-32x3/4" Fil. Hd. Iron Mach.	5,040	65 "
12-24x3/4" " " " " "	4,320	65 "
1/4-20x3/4" " " " Cap	2,750	70 "
1/4-20x1½" " " " " "	9,420	70 "
14-20x1" Rd. Hd. Iron Mach.	26,300	75 "
5/16-24x3/4" S. A. E. Hex Cap	4,500	65 "
14-20x3/4" Flat Head Brass Mach.	11,750	40 "
10-32x3/4" " " " " "	5,000	40 "
3/16-32x5/16" Fil. Head Brass Mach.	3,000	40 "
8-32x5/16" " " " "	10,000	40 "
10-24x1½" Rd. Hd. Brass Mach. Black Enameled	30,000	40 "
10-24x5/16" " " " " Nickled Plated	127,000	40 "
14-20x1½" " " " "	9 600	40 "
14-20x3/16" " " " "	17,100	40 "
3/8x2" Carriage Bolts, less nuts	8,900	75 "
3/8x1½" " " " "	1,600	60 "
12-24x5/32" thick Hex. Nuts, Iron U. S. Thread	5,616	50 "
Push Button Knobs No. 753	10,000	$4.50 per M.
Push Button Base No. 751	8,000	7.00 per M.

BRASS AND COPPER.	LBS.	PRICE PER LB.
3/8"x3/16"—12' lengths Half Hd. Brass Tubing	150	76 c.
9/16"x3/8"—12' " " " " " "	307	53 "
3/8"x3/8" — 8' " Copper Soft "	40	47 "
3/16"x3/8"— 2' lengths Half Hd. Copper Tubing	45	81 "
3/16" Round Brass Rod	4,757	38 "
3/8" " " "	1,570	38 "
3/4" Hex. " "	1,900	39 "
1" Round " "	1,300	36 "
5/16 Hex. " "	1,000	43 "
1 3/32" Round Brass Rod	715	34 "
1 1/8" " " "	276	34 "
11/16" Hex. " "	2,917	34 "
1 1/4" " " "	400	35 "
.071 Soft Brass Wire, in Coils	976	39 "
.093 Hf. Hd. Brass Wire, in Coils	25	32 "
.017 " " " " " "	7	32 "
.060 " " " " Sq. in Coils	8	32 "
.100 " " " " Rd. " "	6	32 "
.188 Soft Brass Wire, in Coils	5	39 "
.095 Soft Copper " " " "	100	36 "
.871 Rd. Phosphor Bronze, 12' lengths	278	42 "
15/16"x.003 Spring Bronze in Rolls	87	36 "
1/32"x.006 " " " "	25	36 "
3/32"x.008 " " " "	109	46 "
6"x.015 " " " "	59	41 "
.220 Hf. Hd. Brass Wire in Coils	37	36 "
.005x5/16" Hf. Hd. Spring Brass, Rolls	84	31 "
.006x1 9/16" Soft Brass, Rolls	109	41 "
.008x7/32" Spring " "	114	56½"
.007x1½" Soft " "	21	46 "
.025x5/16" Hf. Hd. " "	217	32 "
.025x17/32" " " " "	363	32 "
.025x9/16" Clock " "	68	32 "
.060x15/16" Hf. Hd." "	16	32 "
1/16x5/16" " " " "	28	32 "
.062x19/32" Hard Brass. 6' lengths	263	32 "
1/16x5/16" " " 6' "	124	32 "
.065x3/4" Soft " 5' "	71	32 "
1/8"x1" Hard " 6' "	547	32 "

Stiff—Light—Strong

Nesting Tote Boxes

"New Britain" Nesting Tote Boxes occupy little space for storage or transportation, they are very convenient, and are exceptionally durable—three most desirable qualities. Made of one piece, except the handles. The continuous side hems run under the end hems, affording quadruple thickness where the strain is greatest. All laps and folds are electrically welded. Boxes can be furnished liquid-tight if desired. Also made in Stacking Type.

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The New Britain Machine Company

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